ML-758 Installation Manual

Phase 7 / DSI / Dual Timer / F.S.S.

WARNING: For your safety the information in this manual must be followed to minimize the risk of fire or explosion and to prevent property damage, personal injury or death.

— Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

— WHAT TO DO IF YOU SMELL GAS:

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Clear the room, building or area of all occupants.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

— Installation and service must be performed by a qualified installer, service agency or the gas supplier.

AVERTISSEMENT: Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

—Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.

—QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:

- Ne pas tenter d'allumer d'appareils.
- Ne touchez à aucun interrupteur. Ne pas vous servir des téléphones se trouvant dans le bâtiment.
- Évacuez la pièce, le bâtiment ou la zone.
- Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- Si vous ne pouvez rejoindre le fournisseur de gaz, appelez le service des incendies.

—L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.

American Dryer Corp.®

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ADC Part No. 113226-6

Retain This Manual in a Safe Place for Future Reference

This product embodies advanced concepts in engineering, design, and safety. If this product is properly maintained, it will provide many years of safe, efficient, and trouble free operation.

Only qualified technicians should service this equipment.

OBSERVE ALL SAFETY PRECAUTIONS displayed on the equipment or specified in the installation manual included with the dryer.

The following "**FOR YOUR SAFETY**" caution must be posted near the dryer in a prominent location.

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

POUR VOTRE SÉCURITÉ

Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.

We have tried to make this manual as complete as possible and hope you will find it useful. The manufacturer reserves the right to make changes from time to time, without notice or obligation, in prices, specifications, colors, and material, and to change or discontinue models. The illustrations included in this manual may not depict your particular dryer exactly.

IMPORTANT

For your convenience, log the following information:

DATE OF PURCHASE _____ **MODEL NO.** **ML-758 Phase 7**

RESELLER'S NAME _____

SERIAL NUMBER(S) _____

_____

_____

Replacement parts can be obtained from your reseller or the ADC factory. When ordering replacement parts from the factory, you can FAX your order to ADC at +1 (508) 678-9447 or telephone your order directly to the ADC Parts Department at +1 (508) 678-9000. Please specify the dryer model number and serial number in addition to the description and part number, so that your order is processed accurately and promptly.

"IMPORTANT NOTE TO PURCHASER"

Information must be obtained from your local gas supplier on the instructions to be followed if the user smells gas. These instructions must be posted in a prominent location near the dryer.

⚠ WARNING

Proposition 65
Use of this product could expose you to substances from fuel combustion that contain chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

IMPORTANT

YOU MUST DISCONNECT AND LOCKOUT THE ELECTRIC SUPPLY AND THE GAS SUPPLY OR THE STEAM SUPPLY BEFORE ANY COVERS OR GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, OR TESTING OF ANY EQUIPMENT PER OSHA (Occupational Safety and Health Administration) **STANDARDS.**

"Caution: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper operation."

«Attention: Au moment de l'entretien des commandes, étiquetez tous les fils avant de les débrancher. Des erreurs de câblage peuvent entraîner un fonctionnement inadéquat et dangereux.»

CAUTION

DRYERS SHOULD NEVER BE LEFT UNATTENDED WHILE IN OPERATION.

WARNING

CHILDREN SHOULD NOT BE ALLOWED TO PLAY ON OR NEAR THE DRYER(S).

CHILDREN SHOULD BE SUPERVISED IF NEAR DRYERS IN OPERATION.

FOR YOUR SAFETY

DO NOT DRY MOP HEADS IN THE DRYER.

DO NOT USE DRYER IN THE PRESENCE OF DRY CLEANING FUMES.

WARNING

UNDER NO CIRCUMSTANCES should the dryer door switches, lint drawer switch, or heat safety circuit ever be disabled.

WARNING

The dryer *must never be* operated with any of the back guards, outer tops, or service panels removed. PERSONAL INJURY OR FIRE COULD RESULT.

WARNING

DRYER *MUST NEVER BE* OPERATED WITHOUT THE LINT FILTER/SCREEN IN PLACE, EVEN IF AN EXTERNAL LINT COLLECTION SYSTEM IS USED.

IMPORTANT

PLEASE OBSERVE ALL SAFETY PRECAUTIONS displayed on the equipment and/or specified in the installation manual included with the dryer.

Dryer ***must not be*** installed or stored in an area where it **will be** exposed to water or weather.

The wiring diagram for the dryer is located in the front electrical control box area.

IMPORTANT

Dryer *must be* installed in a location/environment, which the ambient temperature remains between 40° F (4.44° C) and 130° F (54.44° C).

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SECTION I

SAFETY PRECAUTIONS

WARNING: For your safety, the information in this manual ***must be*** followed to minimize the risk of fire or explosion or to prevent property damage, personal injury, or loss of life.

WARNING: **The dryer *must never be* operated with any of the back guards, outer tops, or service panels removed. PERSONAL INJURY OR FIRE COULD RESULT**.

1. **DO NOT** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

2. Purchaser/user should consult the local gas supplier for proper instructions to be followed in the event the user smells gas. The instructions **should be** posted in a prominent location.

3. WHAT TO DO IF YOU SMELL GAS:

   a. **DO NOT** try to light any appliance.

   b. **DO NOT** touch any electrical switch.

   c. **DO NOT** use any phone in your building.

   d. Clear the room, building, or area of **ALL** occupants.

   e. Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

   f. If you **cannot** reach your gas supplier, call the fire department.

4. Installation and service **must be** performed by a qualified installer, service agency, or gas supplier.

5. Dryer(s) **must be** exhausted to the outdoors.

6. Although **ADC** produces a very versatile dryer, there are some articles that, due to fabric composition or cleaning method, **should not be** dried in it.

WARNING: Dry only water washed fabrics. ***DO NOT*** dry articles spotted or washed in dry cleaning solvents, a combustible detergent, or "all purpose" cleaner. **EXPLOSION COULD RESULT**.

WARNING: ***DO NOT*** dry rags or articles coated or contaminated with gasoline, kerosene, oil, paint, or wax. **EXPLOSION COULD RESULT**.

WARNING: ***DO NOT*** dry mop heads. Contamination by wax or flammable solvents will create a fire hazard.

WARNING: ***DO NOT*** use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubber materials. Drying in a heated basket (tumbler) may damage plastics or rubber and may be a fire hazard.

7. A program **should be** established for the inspection and cleaning of lint in the burner area, exhaust ductwork, and area around the back of the dryer. The frequency of inspection and cleaning can best be determined from experience at each location.

WARNING: The collection of lint in the burner area and exhaust ductwork can create a potential fire hazard.

8. For personal safety, the dryer **must be** electrically grounded in accordance with local codes and/or the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

NOTE: Failure to electrically ground the dryer properly will VOID THE WARRANTY.

9. **UNDER NO CIRCUMSTANCES** should the dryer door switches, lint drawer switch, or heat safety circuit ever be disabled.

WARNING: PERSONAL INJURY OR FIRE COULD RESULT SHOULD THE DRYER DOOR SWITCHES, LINT DRAWER SWITCH, OR HEAT SAFETY CIRCUIT EVER BE DISABLED.

10. This dryer is not to be used in the presence of dry cleaning solvents or fumes.

11. Remove articles from the dryer as soon as the drying cycle has been completed.

WARNING: Articles left in the dryer after the drying and cooling cycles have been completed can create a fire hazard.

12. **READ AND FOLLOW ALL CAUTION AND DIRECTION LABELS ATTACHED TO THE DRYER**.

13. For safety, proper operation, and optimum performance, the dryer **must not be** operated with a load less than sixty-six percent (66%), 50 lb (22.7 kg) of its rated capacity.

WARNING: YOU MUST DISCONTINUE AND LOCK OUT THE ELECTRIC SUPPLY AND THE GAS SUPPLY OR STEAM SUPPLY BEFORE ANY COVERS OR GUARDS ARE REMOVED FROM THE DRYER TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, OR TESTING OF ANY EQUIPMENT PER OSHA (Occupational Safety and Health Administration) **STANDARDS**.

IMPORTANT: Dryer *must be* installed in a location/environment, which the ambient temperature remains between 40° F (4.44° C) and 130° F (54.44° C).

SECTION II

SPECIFICATIONS/COMPONENT IDENTIFICATION

A. SPECIFICATIONS

MAXIMUM CAPACITY (DRY WEIGHT)			75 lb	**34.02 kg**
TUMBLER DIAMETER			37”	**93.98 cm**
TUMBLER DEPTH			36”	**91.44 cm**
TUMBLER VOLUME			22.40 cu ft	**634.30 L**
TUMBLER/DRIVE MOTOR			1 hp*	**0.75 kW**
BLOWER/FAN MOTOR			N / A	
DOOR OPENING (DIAMETER)			31-3/8”	**79.69 cm**
DOOR SILL HEIGHT			N / A	
WATER CONNECTION			3/4”-11.5 NH (North America)	
			3/4” B.S.P.T. (Outside North America)	
DRYERS PER 20’/40’ CONTAINER			10 / 20	
DRYERS PER 48’/53’ TRUCK			24 / 26	
GAS	VOLTAGE AVAILABLE		120-575V 1,3ø 2,3,4w 50/60 Hz	
	APPROXIMATE NET WEIGHT		741 lb	**336.11 kg**
	APPROXIMATE SHIPPING WEIGHT		793 lb	**359.70 kg**
	AIRFLOW	60 Hz	1,000 cfm	**28.32 cmm**
		50 Hz	833 cfm	**23.60 cmm**
	HEAT INPUT		175,000 Btu/hr	**44,099 kcal/hr**
	EXHAUST CONNECTION (DIAMETER)		8”	**20.32 cm**
	COMPRESSED AIR CONNECTION		N / A	
	COMPRESSED AIR VOLUME		N / A	
	INLET PIPE CONNECTION		3/4” F.N.P.T.	
			3/4” B.S.P.T. (CE and Australia Only)	
ELECTRIC	VOLTAGE AVAILABLE		208-575V 3ø 3,4w 50/60 Hz	
	APPROXIMATE NET WEIGHT		741 lb	**336.11 kg**
	APPROXIMATE SHIPPING WEIGHT		793 lb	**359.70 kg**
	AIRFLOW	60 Hz	1,000 cfm	**28.32 cmm**
		50 Hz	833 cfm	**23.60 cmm**
	EXHAUST CONNECTION (DIAMETER)		8”	**20.32 cm**
	COMPRESSED AIR CONNECTION		N / A	
	COMPRESSED AIR VOLUME		N / A	
	OVEN SIZE			
	kW	Btu/hr	**kcal/hr**	
	30	102,400	**25,800**	
STEAM	VOLTAGE AVAILABLE		120-575V 1,3ø 2,3,4w 50/60 Hz	
	APPROXIMATE NET WEIGHT		836 lb	**379.20 kg**
	APPROXIMATE SHIPPING WEIGHT		888 lb	**402.79 kg**
	AIRFLOW	60 Hz	1,000 cfm	**28.32 cmm**
		50 Hz	833 cfm	**23.60 cmm**
	STEAM CONSUMPTION		239 lb/hr	**108.41 kg/hr**
	OPERATING STEAM PRESSURE		125 psi max	**8.62 bar**
	EXHAUST CONNECTION (DIAMETER)		8”	**20.32 cm**
	COMPRESSED AIR CONNECTION		1/8” F.N.P.T.	
	COMPRESSED AIR VOLUME		0.75 cfh	**0.02 cmh**
	BOILER HORSEPOWER (NORMAL LOAD)		7 Bhp	
	SUPPLY CONNECTION		1” F.N.P.T.	
	RETURN CONNECTION		1” F.N.P.T.	

Shaded areas are stated in metric equivalents 8/24/06

* All reversing dryers are supplied with two (2) 3-phase (3ø) motors standard: a 1 hp (0.75 kW) blower motor and a 1/2 hp (0.37 kW) drive motor.

NOTE: **ADC** reserves the right to make changes in specifications at any time without notice or obligation.

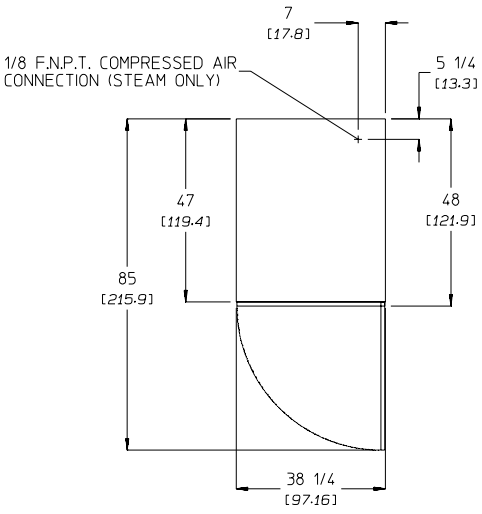
Specifications (Gas / Electric / Steam)

DRYER NOTES:

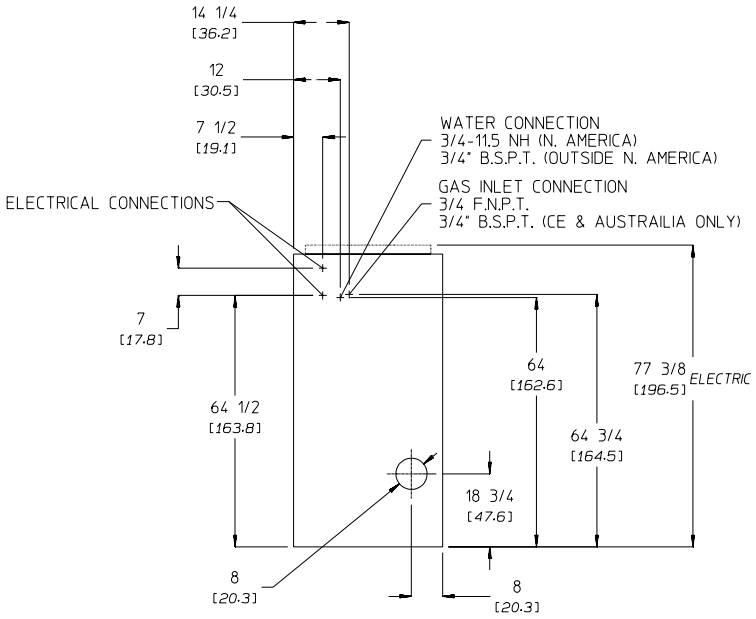
° DUCTWORK SIZE VARIES WITH INSTALLATION CONDITIONS.
° EXHAUST STATIC PRESSURE MUST BE NO LESS THAN 0 AND MUST NOT EXCEED 0.7" (1.74 MB) WATER COLUMN.

STEAM DRYER NOTES:

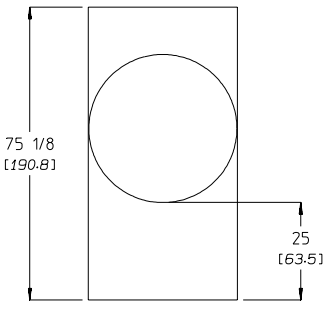
° OPERATING HEIGHT OF STEAM DRYER IS 79" (200.6 CM).
° SIZE OF PIPING TO DRYER VARIES WITH INSTALLATION CONDITIONS. CONTACT FACTORY FOR ASSISTANCE.
° STEAM DRYERS MUST BE PROVIDED WITH CLEAN, DRY, REGULATED 80 PSI ± 10 PSI (5.5 BAR ± 0.69 BAR) AIR SUPPLY.



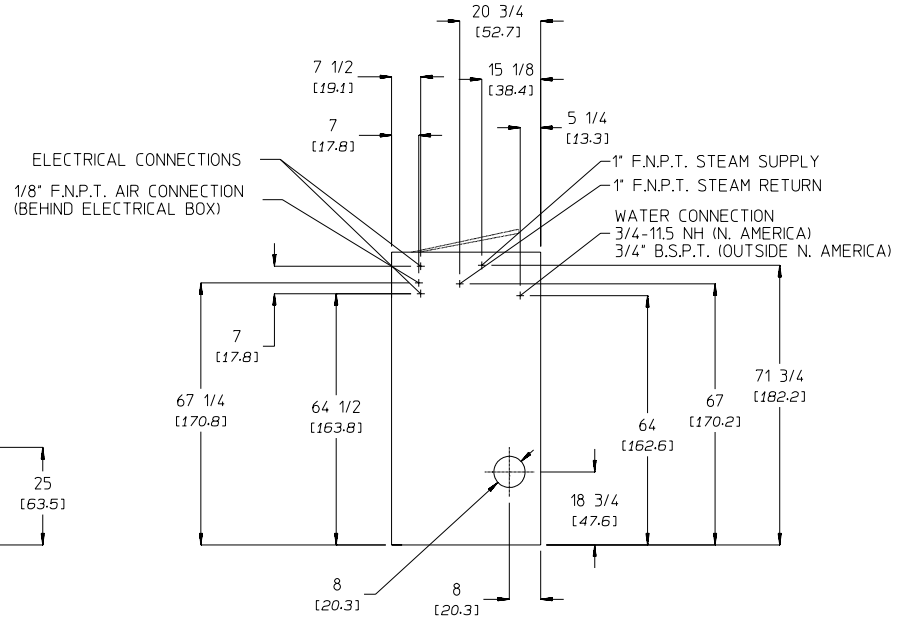
PLAN VIEW



REAR VIEW (GAS AND ELECTRIC)



FRONT VIEW



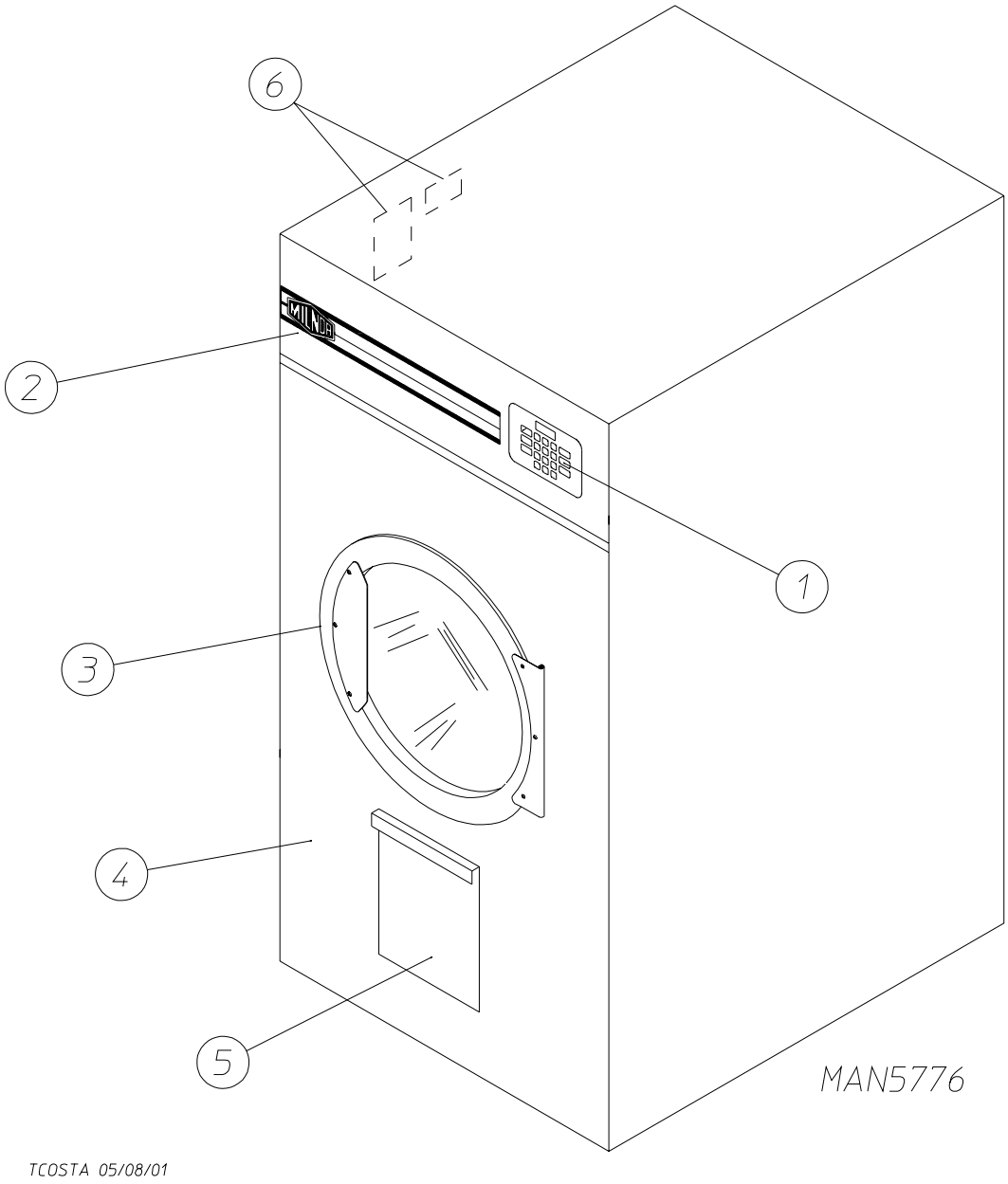
REAR VIEW (STEAM ONLY)

7/8/04

NOTE: **ADC** reserves the right to make changes in specifications at any time without notice or obligation.

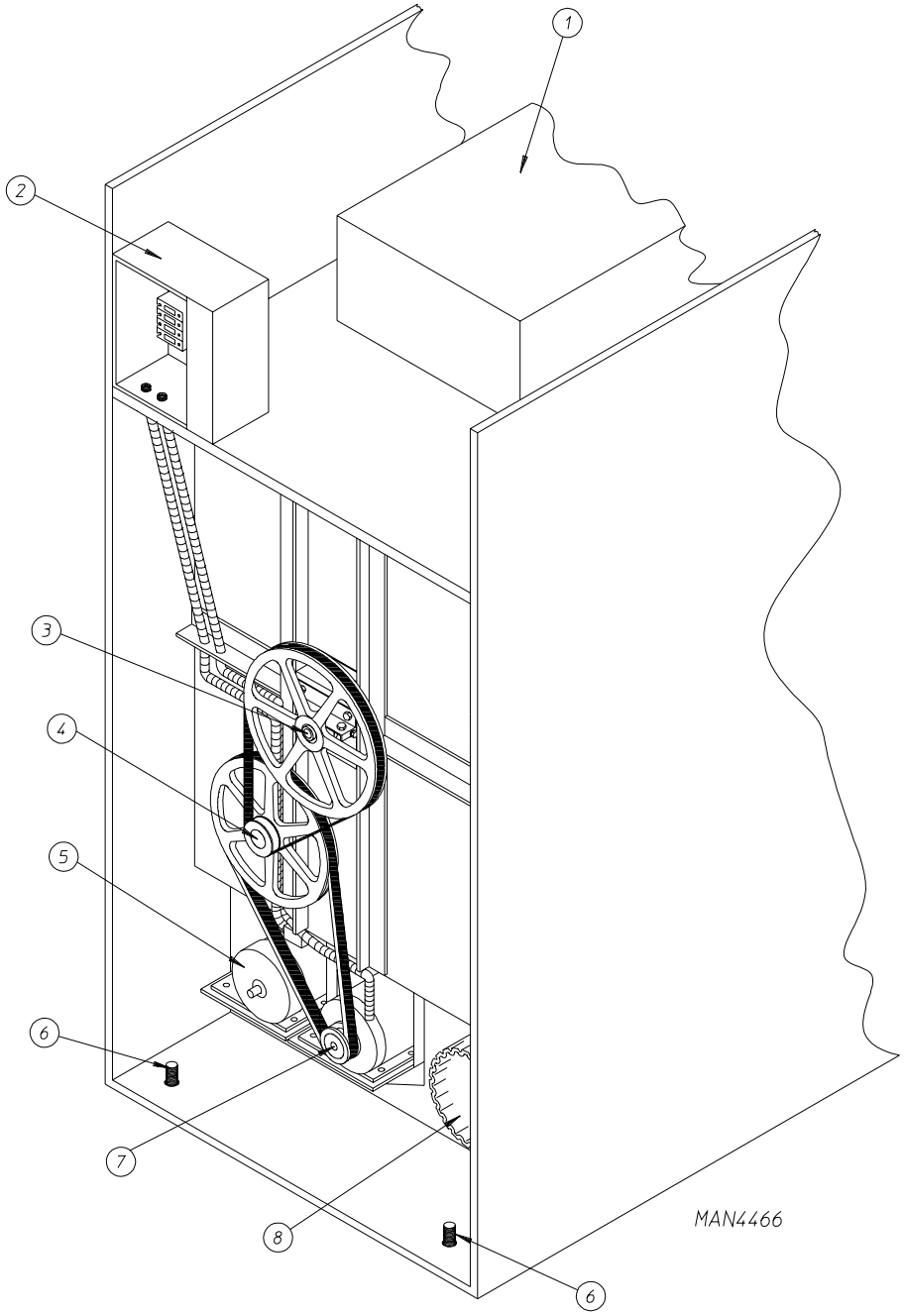
B. COMPONENT IDENTIFICATION

1. Dryer Front View



Illus. No.	Description
1	Controls
2	Control (top access) Door Assembly
3	Main Door Assembly
4	Lint Compartment Area (lint screen located in lint drawer)
5	Lint Drawer
6	Data Label and Installation Label

2. Dryer Rear View



Illus. No.	Description
1	Heating Unit
2	Electric Service Relay Box
3	Basket (tumbler) Bearing Mount Assembly
4	Idler Bearing Mount Assembly
5	Blower Motor Assembly (for reversing models only)
6	Leveling Legs (rear)
7	Basket (drive) Motor Assembly
8	Dryer Exhaust

SECTION III
INSTALLATION PROCEDURES

Installation **should be** performed by competent technicians in accordance with local and state codes. In the absence of these codes, the installation **must conform** to applicable American National Standards: ANSI Z223.1-LATEST EDITION (National Fuel Gas Code) or ANSI/NFPA NO. 70-LATEST EDITION (National Electrical Code) or in Canada, the installation **must conform** to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (Liquid Propane [L.P.] Gas) or LATEST EDITION (for General Installation and Gas Plumbing) or Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

A. LOCATION REQUIREMENTS

Before installing the dryer, be sure the location conforms to local codes and ordinances. In the absence of such codes or ordinances the location **must conform** with the National Fuel Gas Code ANSI.Z223.1 LATEST EDITION, or in Canada, the installation **must conform** to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (L.P. Gas) or LATEST EDITION (for General Installation and Gas Plumbing).

1. The dryer **must be** installed on a sound level floor capable of supporting its weight. Carpeting **must be** removed from the floor area that the dryer is to rest on.

IMPORTANT: "The dryer ***must be*** installed on noncombustible floors only."

2. The dryer **must not be** installed or stored in an area where it will be exposed to water and/or weather.

3. The dryer is for use in noncombustible locations.

4. Provisions for adequate air supply **must be** provided as noted in this manual (refer to **Fresh Air Supply Requirements** in **Section D**).

5. Clearance provisions **must be** made from noncombustible construction as noted in this manual (refer to **Dryer Enclosure Requirements** in **Section C**).

6. Provisions **must be** made for adequate clearances for servicing and for operation as noted in this manual (refer to **Dryer Enclosure Requirements** in **Section C**).

7. Dryer **must be** exhausted to the outdoors as noted in this manual (refer to **Exhaust Requirements** in **Section E**).

8. Dryer **must be** located in an area where correct exhaust venting can be achieved as noted in this manual (refer to **Exhaust Requirements** in **Section E**).

9. The dryer **must be** installed with a proper exhaust duct connection to the outside.

10. The dryer **must be** installed with provisions for adequate combustion and make-up air supply.

CAUTION: This dryer produces combustible lint and ***must be*** exhausted to the outdoors. Every 6 months, inspect the exhaust ducting and remove any lint buildup.

IMPORTANT: Dryer ***should be*** located where a minimum amount of exhaust duct **will be** necessary.

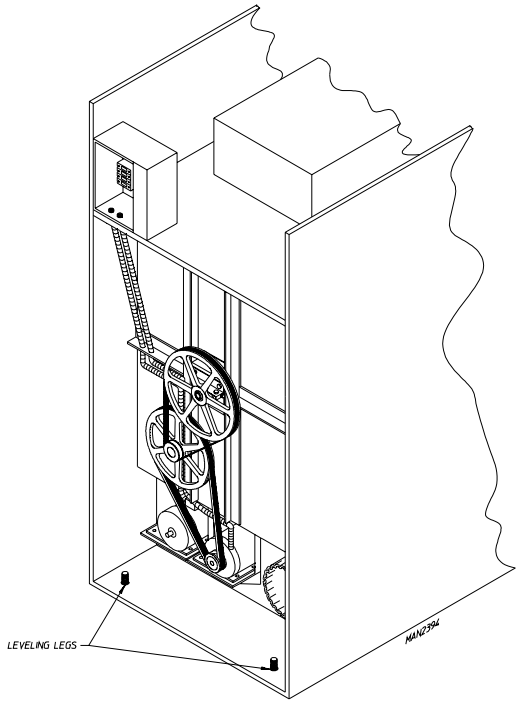
IMPORTANT: Dryer *must be* installed in a location/environment, which the ambient temperature remains between 40° F (4.44° C) and 130° F (54.44° C).

B. UNPACKING/SETTING UP

Remove protective shipping material (i.e., plastic wrap and/or optional shipping box) from dryer.

IMPORTANT: Dryer ***must be*** transported and handled in an upright position at **ALL** times.

The dryer can be moved to its final location while still attached to the skid or with the skid removed. To unskid the dryer, locate and remove the two (2) bolts securing the base of the dryer to the wooden skid. One (1) is at the rear base (remove the back panel for access), and the other is located in the bottom of the lint chamber. To remove the bolt located in the lint chamber area, remove the lint drawer.

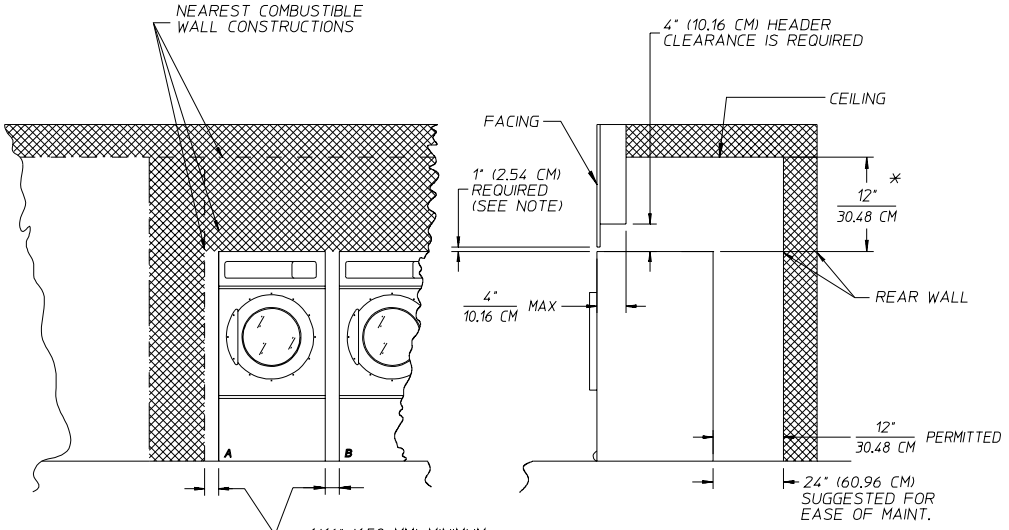


Leveling Dryer

The dryer is equipped with four (4) leveling legs, one (1) at each corner of the base. Two (2) are located at the rear of the dryer base, and two (2) are located in the lint chamber (coop). To increase bearing life and improve efficiency, the dryer **should be** tilted slightly to the rear.

C. DRYER ENCLOSURE REQUIREMENTS

Bulkheads and partitions **should be** made of noncombustible materials and **must be** located a minimum of 12-inches (30.48 cm), 18-inches (45.72 cm) or more is recommended for ease of installation, maintenance, and service above the dryer's outer top, except along the front of the dryer, which may be partially closed in if desired. The clearance between the bulkhead header and the dryer **must be** a minimum of 4-inches (10.16 cm) and must not extend more than 4-inches (10.16 cm) to the rear of the front. The bulkhead facing **must not be** closed in **ALL** the way to the top of the dryer. A 1-inch (2.54 cm) clearance is required.


NEAREST COMBUSTIBLE WALL CONSTRUCTIONS
4" (10.16 CM) HEADER CLEARANCE IS REQUIRED
CEILING
FACING
1" (2.54 CM) REQUIRED (SEE NOTE)
*
12" 30.48 CM
REAR WALL
4" 10.16 CM MAX
12" 30.48 CM PERMITTED
24" (60.96 CM) SUGGESTED FOR EASE OF MAINT.
A
B
1/16" (1.58 MM) MINIMUM (1"-2" [2.54 CM-5.08 CM] SUGGESTED FOR EASE OF MAINT.)
NOTE:
1. ALLOWANCE MUST BE MADE TO ALLOW CONTROL DOOR TO OPEN.
*IN CASES WHERE SPRINKLER HEADS ARE OVER THE DRYERS 18" (45.72 CM) IS SUGGESTED.
CA 2/23/01
MAN5694

INSTALLATION: DRYER CLEARANCE TO ADJACENT WALL STRUCTURES.

NOTE: Allowances ***must be*** made for the opening of the control door.

Dryers may be positioned sidewall to sidewall. However, a 1/16" (1.58 mm) minimum allowance **must be** made for the opening and closing of the control door. It is suggested that the dryer be positioned about 2 feet (0.61 meters) away from the nearest obstruction for ease of installation, maintenance, and service (to be measured from the back guard). Refer to the **illustration above** for details.

NOTE: Air considerations are important for proper and efficient operation.

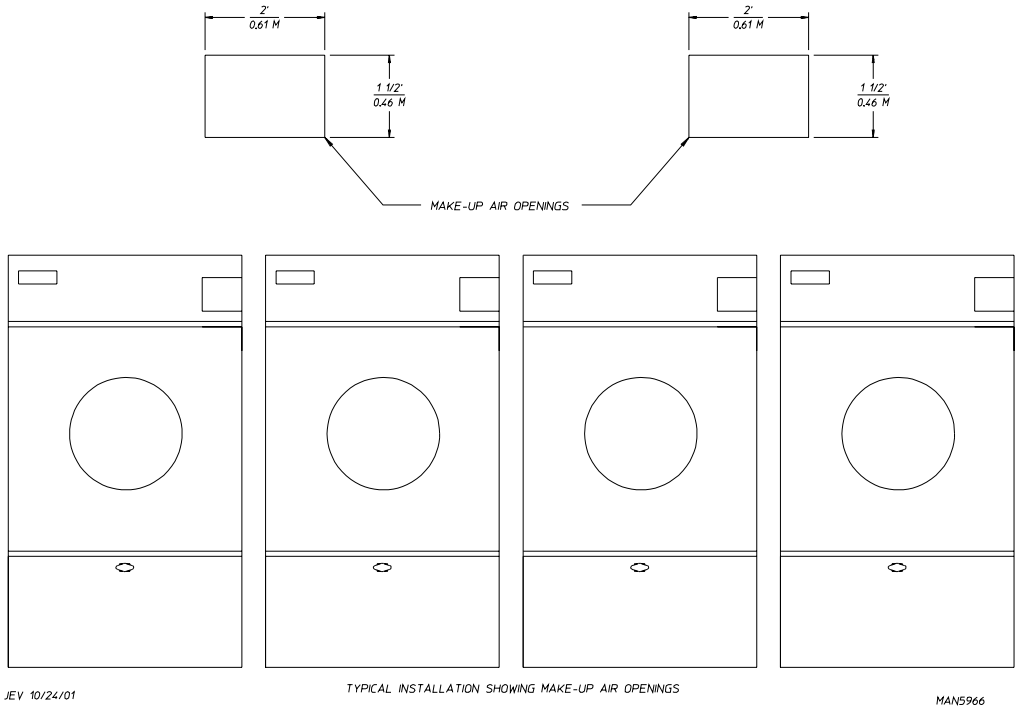
IMPORTANT: Even though a minimum of only 12-inches (30.48 cm) is required, 24-inches (60.96 cm) or more is suggested. The additional clearance is advantageous for ease of installation and service.

IMPORTANT: When fire sprinkler systems are located above the dryers, a minimum of 18-inches (45.72 cm) above the dryer console (module) is required.

D. FRESH AIR SUPPLY REQUIREMENTS

When the dryer is operating, it draws in room air, heats it, passes this air through the basket (tumbler), and exhausts it out of the building. Therefore, the room air **must be** continually replenished from the outdoors. If the make-up air is inadequate, drying time and drying efficiency will be adversely affected. Ignition problems and sail switch "fluttering" problems may result, as well as premature motor failure from overheating.

Air supply (make-up air) **must be** given careful consideration to ensure proper performance of each dryer. An unrestricted source of air is necessary for each dryer. An airflow of 1,000 cfm (cubic feet per minute), (28.3 cmm [cubic meters per minute]) **must be** supplied to each dryer. As a general rule, an unrestricted air entrance from the outdoors (atmosphere) of a minimum of 1-1/2 square feet (0.14 square meters) is required for each dryer. (Calculation based on 1 inch^2 [6.4516 cm^2] per 1,000 Btu [251.9958 kcal].) The dryer **must be** installed with provisions for adequate combustion and make-up air supply.



To compensate for the use of registers or louvers used over the openings, these make-up air openings **must be** increased by approximately thirty-three percent (33%). Make-up air openings **should not be** located in an area directly near where exhaust vents exit the building.

It is not necessary to have a separate make-up air opening for each dryer. Common make-up air openings are acceptable. However, they **must be** set up in such a manner that the make-up air is distributed equally to **ALL** the dryers.

EXAMPLE: For a bank of four (4) dryers, two (2) unrestricted openings measuring 2 feet by 1-1/2 feet (0.61 meters by 0.46 meters) are acceptable. (Calculation based on 1 inch^2 [6.4516 cm^2] per 1,000 Btu [251.9958 kcal].)

Allowances **must be** made for remote or constricting passageways or where dryers are located at excessive altitudes or predominantly low pressure areas.

IMPORTANT: Make-up air ***must be*** provided from a source free of dry cleaning solvent fumes. Make-up air that is contaminated by dry cleaning solvent fumes will result in irreparable damage to the motors and other dryer components.

NOTE: Component failure due to dry cleaning solvent fumes will VOID THE WARRANTY.

E. EXHAUST REQUIREMENTS

1. General Exhaust Ductwork Information

   Exhaust ductwork **should be** designed and installed by a qualified professional. Improperly sized ductwork will create excessive back pressure, which results in slow drying, increased use of energy, overheating of the dryer, and shutdown of the burner by the airflow (sail) switches, burner hi-limits, or basket (tumbler) hi-limits. The dryer **must be** installed with a proper exhaust duct connection to the outside.

CAUTION: This dryer produces combustible lint and ***must be*** exhausted to the outdoors.

CAUTION: IMPROPERLY SIZED OR INSTALLED EXHAUST DUCTWORK CAN CREATE A POTENTIAL FIRE HAZARD.

The ductwork **should be** laid out in such a way that the ductwork travels as directly as possible to the outdoors with as few turns as possible. Single or independent dryer venting is recommended.

Horizontal Venting:

When single dryer venting is used, the length of ductwork from the dryer to the outside exhaust outlet **must not exceed** 25 feet (7.62 meters). The minimum diameter of this ductwork **must be** at least 8-inches (20.32 cm). In the case of multiple (common) dryer venting, the distance from the last dryer to the outside exhaust outlet **must not exceed** 15 feet (4.57 meters). The shape of the ductwork is not critical as long as the minimum cross-sectional area is provided. It is suggested that the use of 90° turns be avoided; use 30° and/or 45° angles instead. The radius of the elbows **should preferably be** 1-1/2 times the diameter of the duct. Including basket (tumbler)/dryer elbow connections or elbows used for outside protection from the weather, no more than one (1) elbow **should be** used in the exhaust duct run. If more than one (1) elbow is used, the cross-sectional area of the ductwork **must be** increased. **ALL** ductwork **should be** smooth inside with no projections from sheet metal screws or other obstructions, which will collect lint. When adding ducts, the duct to be added should overlap the duct to which it is to be connected. **ALL** ductwork joints **must be** taped to prevent moisture and lint from escaping into the building. Inspection doors **should be** installed at strategic points in the exhaust ductwork for periodic inspection and cleaning of lint from the ductwork.

Vertical Venting:

When single dryer venting is used, the length of the ductwork from the dryer to the outside exhaust outlet **must not exceed** 15 feet (4.57 meters). The minimum diameter of this ductwork **must be** at least 8-inches (20.32 cm). In the case of multiple (common) dryer venting, the distance from the last dryer to the outside exhaust outlet **must not exceed** 15 feet (4.57 meters). The shape of the ductwork is not critical as long as the minimum cross-sectional area is provided. It is suggested that the use of 90° turns be avoided; use 30° and/or 45° bends instead. The radius of the elbows **should preferably be** 1-1/2 times the diameter of the duct. **ALL** ductwork **should be** smooth inside with no projections from sheet metal screws or other obstructions, which will collect lint. When adding ducts, the duct to be added should overlap the duct to which it is to be connected. **ALL** ductwork joints **must be** taped to prevent moisture and lint from escaping into the building. Inspection doors **should be** installed at strategic points in the exhaust ductwork for periodic inspection and cleaning of lint from the ductwork.

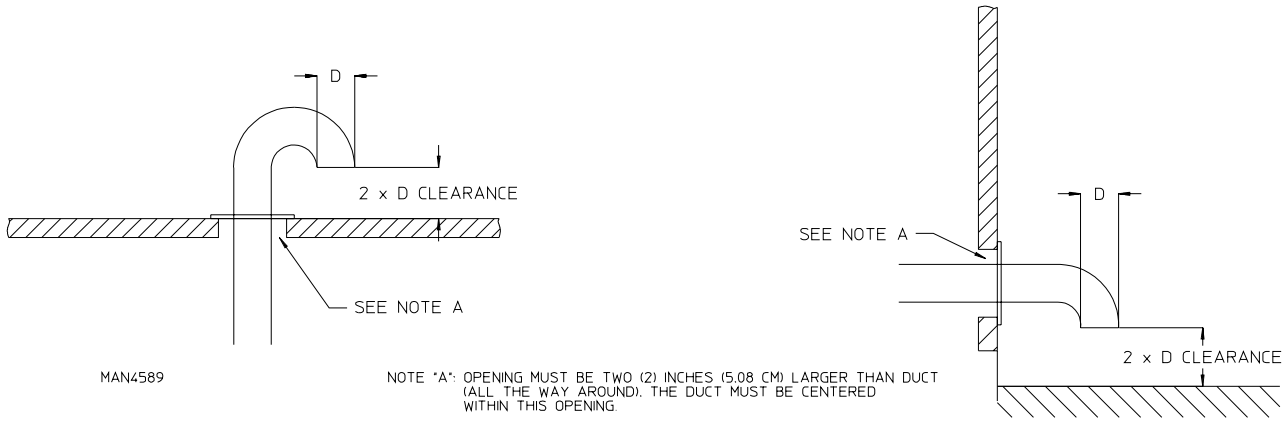
IMPORTANT: **It is recommended** that exhaust or booster fans not be used in the exhaust ductwork system.

IMPORTANT: Exhaust back pressure measured by a manometer in the exhaust duct ***must be*** no less than 0 and ***must not exceed*** 0.7 inches (1.74 mb) of water column (W.C.).

NOTE: When the exhaust ductwork passes through a wall, ceiling, or roof made of combustible materials, the opening ***must be*** 2-inches (5.08 cm) larger than the duct (all the way around). The duct ***must be*** centered within this opening.

Outside Ductwork Protection

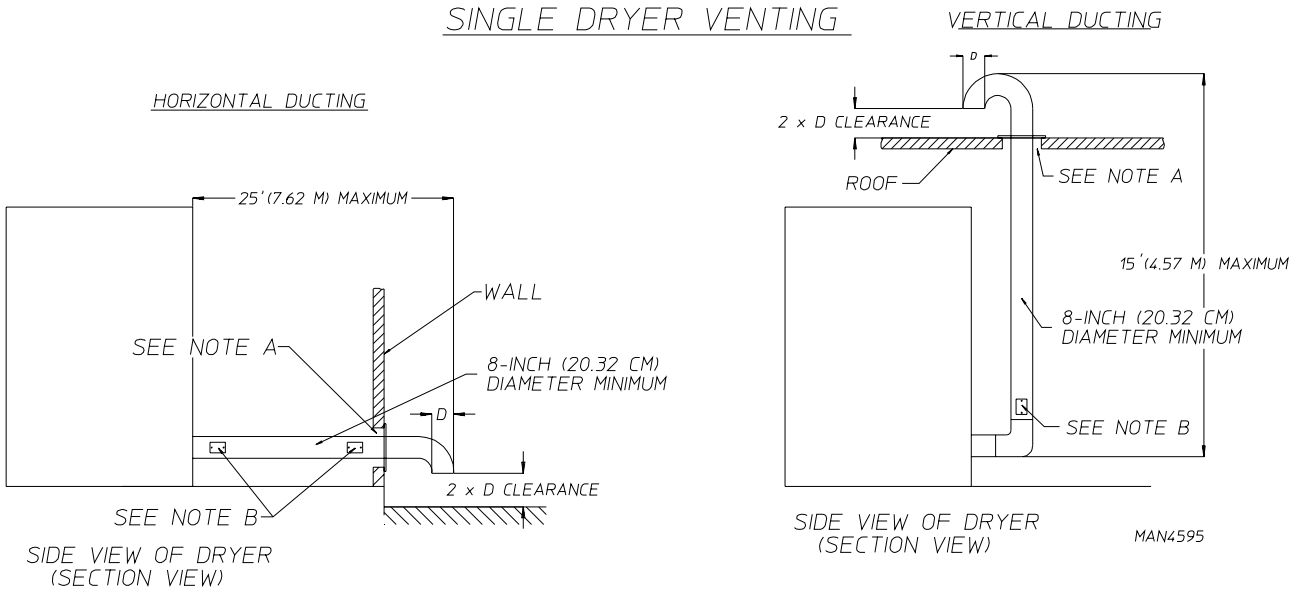
To protect the outside end of the horizontal ductwork from the weather, a 90° elbow bent downward **should be** installed where the exhaust exits the building. If the ductwork travels vertically up through the roof, it **should be** protected from the weather by using a 180° turn to point the opening downward. In either case, allow at least twice the diameter of the duct between the duct opening and the nearest obstruction.


VERTICAL DUCTING
HORIZONTAL DUCTING
D
2 x D CLEARANCE
SEE NOTE A
D
SEE NOTE A
2 x D CLEARANCE
MAN4589
NOTE "A": OPENING MUST BE TWO (2) INCHES (5.08 CM) LARGER THAN DUCT (ALL THE WAY AROUND). THE DUCT MUST BE CENTERED WITHIN THIS OPENING.

2. Single Dryer Venting

When possible, it is suggested to provide a separate exhaust duct for each dryer. The exhaust duct **should be** laid out in such a way that the ductwork travels as directly as possible to the outdoors with as few turns as possible. It is suggested that the use of 90° turns in the ducting be avoided; use 30° and/or 45° angles instead. The shape of the exhaust ductwork is not critical as long as the minimum cross section area is provided.

NOTE: As per the National Fuel Gas Code, "Exhaust ducts for type 2 clothes dryers shall be constructed of sheet metal or other noncombustible material. Such ducts shall be equivalent in strength and corrosion resistance to ducts made of galvanized sheet steel not less than 26 gauge (0.0195 inches [0.50 mm]) thick."



NOTE: "A"- OPENING MUST BE TWO (2) INCHES (5.08 CM) LARGER THAN DUCT (ALL THE WAY AROUND). THE DUCT MUST BE CENTERED WITHIN THIS OPENING.
"B"- INSPECTION DOORS SHOULD BE INSTALLED AT STRATEGIC POINTS FOR PERIODIC INSPECTION AND CLEANING

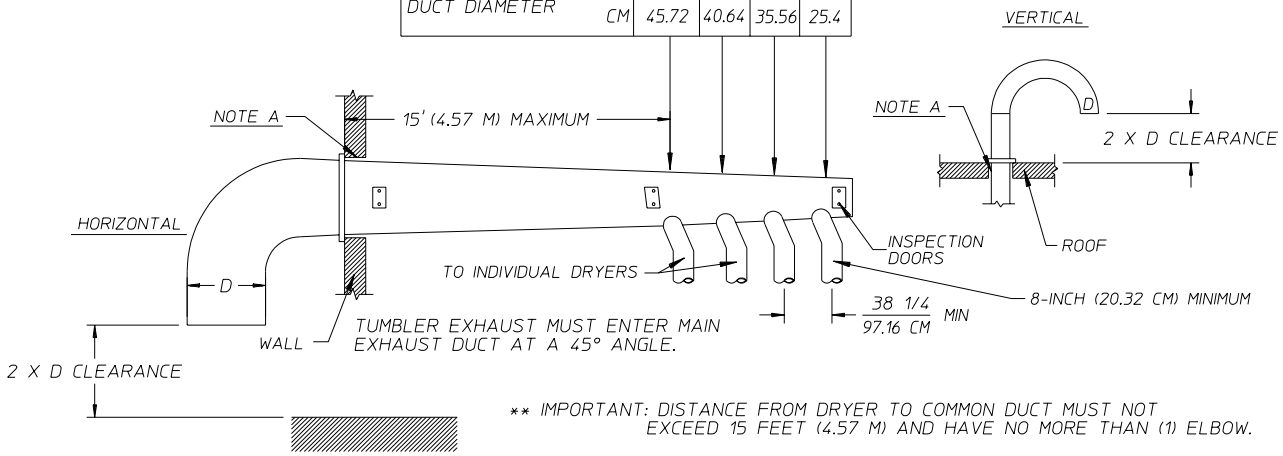
IMPORTANT: For extended ductwork runs, the cross section area of the ductwork can only be increased to an extent. When the ductwork approaches the maximum limits noted in this manual, a professional heating, ventilating, and air-conditioning (HVAC) firm ***should be*** consulted for proper venting information.

IMPORTANT: ***DO NOT*** use screens, louvers, or caps on the outside opening of the exhaust ductwork.

3. Multiple (Common) Dryer Venting

MULTIPLE DRYER VENTING (758) WITH 8" (20.32 CM) DIAMETER
(1,000 CFM [28.3 cmm]) EXHAUST CONNECTIONS AT COMMON DUCT

NO. OF DRYERS		4	3	2	1
MINIMUM CROSS SECTION AREA	SQ IN	254	200	154	79
	SQ CM	1638.7	1290.32	999.55	509.68
MINIMUM ROUND DUCT DIAMETER	IN	18	16	14	10
	CM	45.72	40.64	35.56	25.4



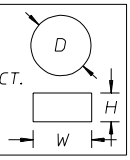
** IMPORTANT: DISTANCE FROM DRYER TO COMMON DUCT MUST NOT EXCEED 15 FEET (4.57 M) AND HAVE NO MORE THAN (1) ELBOW.

IMPORTANT: NO MORE THAN 4 DRYERS CAN BE CONNECTED TO ONE COMMON DUCT (VENT).

FORMULAS TO CALCULATE DUCTING CROSS SECTIONAL AREA

CROSS SECTIONAL AREA OF A ROUND DUCT = .785 (19.939 MM) x D^2 WHERE D = DIAMETER OF THE DUCT.

CROSS SECTIONAL AREA OF A RECTANGULAR DUCT = W x H WHERE W = WIDTH AND H = HEIGHT.



NOTE A: OPENING MUST BE 2-INCHES (5.08 CM) LARGER THAN THE DUCT (ALL THE WAY AROUND). THE DUCT MUST BE CENTERED WITHIN THIS OPENING.

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F. ELECTRICAL INFORMATION

1. Electrical Requirements

ALL electrical connections must be made by a properly licensed and competent electrician. This is to ensure that the electrical installation is adequate and conforms to local and state regulations or codes. In the absence of such codes, **ALL** electrical connections, materials, and workmanship **must conform** to the applicable requirements of the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

IMPORTANT: Failure to comply with these codes or ordinances, and/or the requirements stipulated in this manual can result in personal injury or component failure.

NOTE: Component failure due to improper installation will VOID THE WARRANTY.

Each dryer **should be** connected to an independently protected branch circuit. The dryer **must be** connected with copper wire only. ***DO NOT use aluminum wire, it could create a fire hazard***. The copper conductor wire/cable **must be** of proper ampacity and insulation in accordance with electric codes for making **ALL** service connections.

NOTE: The use of aluminum wire will VOID THE WARRANTY.

IMPORTANT: A separate protected circuit ***must be*** provided to each dryer.

NOTE: An individual ground circuit must be provided to each dryer, do not daisy chain.

IMPORTANT: The dryer ***must be*** connected to the electric supply shown on the data label. In the case of 208 VAC or 240 VAC, the supply voltage must match the electric service specifications of the data label **exactly**.

IMPORTANT: The wire size ***must be*** properly sized to handle the related current.

WARNING: **208 VAC AND 240 VAC ARE NOT THE SAME**. Any damage done to dryer components due to improper voltage connections will automatically VOID THE WARRANTY.

NOTE: Component failure due to improper voltage application will VOID THE WARRANTY.

NOTE: **ADC** reserves the right to make changes in specifications at any time without notice or obligation.

2. Electrical Service Specifications

a. Gas and Steam Models

GAS AND STEAM (NON-REVERSING)

ELECTRICAL SERVICE SPECIFICATIONS (PER DRYER)

IMPORTANT: 208 VAC AND 230/240 VAC ARE NOT THE SAME. When ordering, specify exact voltage.

NOTES:
A. When fuses are used they must be dual element, time delay, current limiting, class RK1 or RK5 ONLY. Calculate/determine correct fuse value, by applying either local and/or National Electrical Codes to listed appliance amp draw data.
B. Circuit breakers are thermal-magnetic (industrial) motor curve type ONLY. For others, calculate/verify correct breaker size according to appliance amp draw rating and type of breaker used.
C. Circuit breakers for 3-phase (3Ø) dryers must be 3-pole type.

SERVICE VOLTAGE	PHASE	WIRE SERVICE	APPROX. AMP DRAW		MINIMUM WIRE SIZE	FUSING	CIRCUIT BREAKER
			60 Hz	50 Hz		Dual Element Time Delay	
120	1ø	2	13.0	—	*	20	20
208	1ø	2	7.6	—	*	15	15
220	1ø	2	7.3	8.6	*	15	15
230	1ø	2	—	8.0	*	15	15
240	1ø	2	7.0	—	*	15	15
208	3ø	3	4.7	—	*	15	15
230	3ø	3	—	4.7	*	15	15
240	3ø	3	4.9	—	*	15	15
380	3ø	3	2.9	—	*	15	15
380	3ø	4**	—	3.1	*	15	15
400	3ø	4**	—	3.2	*	15	15
416	3ø	4**	—	3.1	*	15	15
460-480	3ø	3	2.8	—	*	15	15

7/16/08

* AWG Stranded Wire Type, size wire as per National Electrical Code or local codes.
** 3-Wire is available.

GAS AND STEAM (REVERSING)

ELECTRICAL SERVICE SPECIFICATIONS (PER DRYER)

IMPORTANT: 208 VAC AND 230/240 VAC ARE NOT THE SAME. When ordering, specify exact voltage.

NOTES:
A. When fuses are used they must be dual element, time delay, current limiting, class RK1 or RK5 ONLY. Calculate/determine correct fuse value, by applying either local and/or National Electrical Codes to listed appliance amp draw data.
B. Circuit breakers are thermal-magnetic (industrial) motor curve type ONLY. For others, calculate/verify correct breaker size according to appliance amp draw rating and type of breaker used.
C. Circuit breakers for 3-phase (3Ø) dryers must be 3-pole type.

SERVICE VOLTAGE	PHASE	WIRE SERVICE	APPROX. AMP DRAW		MINIMUM WIRE SIZE	FUSING	CIRCUIT BREAKER
			60 Hz	50 Hz		Dual Element Time Delay	
208	3ø	3	6.7	—	*	15	15
230	3ø	3	—	7.5	*	15	15
240	3ø	3	7.1	—	*	15	15
380	3ø	3	4.2	—	*	15	15
380	3ø	4**	—	4.3	*	15	15
400	3ø	4**	—	4.4	*	15	15
416	3ø	4**	—	4.4	*	15	15
460	3ø	3	3.9	—	*	15	15
480	3ø	3	3.9	—	*	15	15
575	3ø	3	3.3	—	*	15	15

7/16/08

* AWG Stranded Wire Type, size wire as per National Electrical Code or local codes.
** 3-Wire is available.

b. Electric Models Only

ALL electrically heated dryers **must be** connected to the electric service shown on the dryer's data label. The connecting wires **must be** properly sized to handle the rated current.

ELECTRIC – 30 kW

ELECTRICAL SERVICE SPECIFICATIONS (PER DRYER)

IMPORTANT: 208 VAC AND 230/240 VAC ARE NOT THE SAME. When ordering, specify exact voltage.

NOTES:
A. When fuses are used they must be dual element, time delay, current limiting, class RK1 or RK5 ONLY. Calculate/determine correct fuse value, by applying either local and/or National Electrical Codes to listed appliance amp draw data.
B. Circuit breakers are thermal-magnetic (industrial) type ONLY. For others, calculate/verify correct breaker size according to appliance amp draw rating and type of breaker used.
C. Circuit breakers for 3-phase (3Ø) dryers must be 3-pole type.

SERVICE VOLTAGE	PHASE	WIRE SERVICE	APPROX. AMP DRAW		MINIMUM WIRE SIZE	FUSING	CIRCUIT BREAKER
			60 Hz	50 Hz		Dual Element Time Delay	
208	3ø	3	91	—	*	125	125
230	3ø	3	—	83	*	125	125
240	3ø	3	79	—	*	100	100
380	3ø	3	48	—	*	60	60
380	3ø	4**	—	54	*	70	70
400	3ø	4**	—	51	*	70	70
416	3ø	4**	—	50	*	70	70
460	3ø	3	40	—	*	50	50
480	3ø	3	39	—	*	50	50
575	3ø	3	33	—	*	50	50

7/16/08

* AWG Stranded Wire Type, size wire as per National Electrical Code or local codes.
** 3-Wire is available.

3. Grounding

A ground (earth) connection **must be** provided and installed in accordance with state and local codes. In the absence of these codes, grounding **must conform** to applicable requirements of the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION, or in Canada, the installation **must conform** to applicable Canada Standards: Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION. The ground connection may be to a proven earth ground at the location service panel.

For added personal safety, when possible, it is suggested that a separate ground wire (sized per local codes) be connected from the ground connection of the dryer to a grounded cold water pipe. ***DO NOT ground to a gas pipe or hot water pipe***. The grounded cold water pipe must have metal-to-metal connection **ALL** the way to the electrical ground. If there are any nonmetallic interruptions, such as, a meter, pump, plastic, rubber, or other insulating connectors, they **must be** jumped out with copper wire (sized per local codes) and securely clamped to bare metal at both ends.

IMPORTANT: For personal safety and proper operation, the dryer ***must be*** grounded.

Provisions are made for ground connection in each dryer at the electrical service connection area.

4. Electrical Connections

A wiring diagram is located inside the control box for connection data.

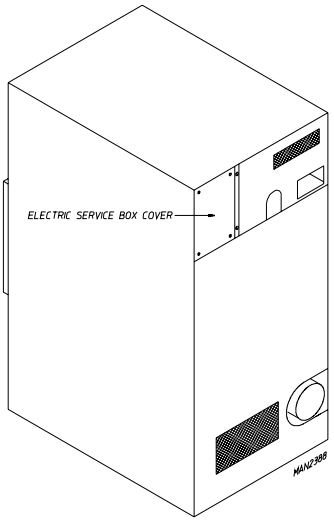
If local codes permit, power to the dryer can be made by the use of a flexible U.L. listed power cord/pigtail (wire size **must conform** to rating of dryer), or the dryer can be hard wired directly to the service breaker panel. In both cases, a strain relief **must be** installed where the wiring enters the dryer.

IMPORTANT: A separate protected circuit ***must be*** provided to each dryer.

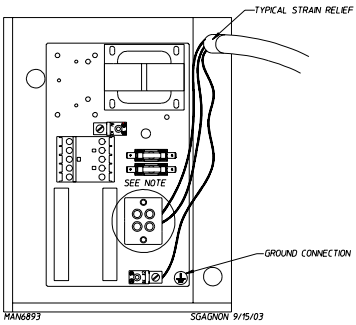
a. Gas and Steam Models Only

1) Single-Phase (1ø) Wiring Connections/Hookup

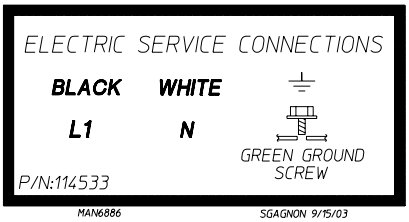
The electrical input connections on **ALL** single-phase (1ø) gas dryers and steam dryers are made into the rear service box located at the upper left area of the dryer.

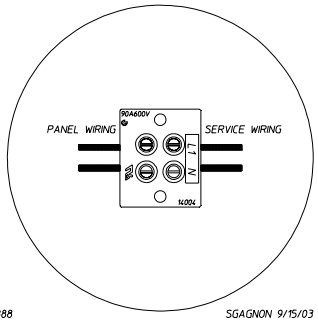


Single-Phase Electrical Lead Connections		
Black + Positive	White or Red + Neutral or L2	Green + Ground

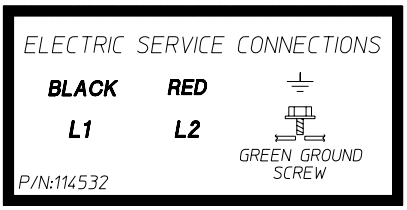


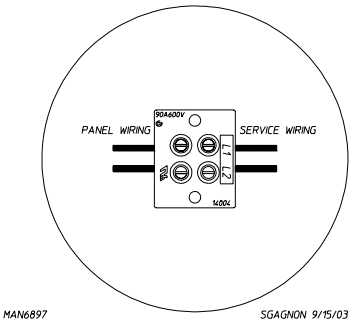
FOR 110V APPLICATIONS





FOR 208-240V APPLICATIONS

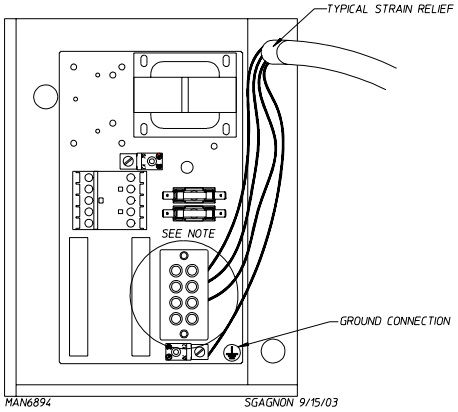


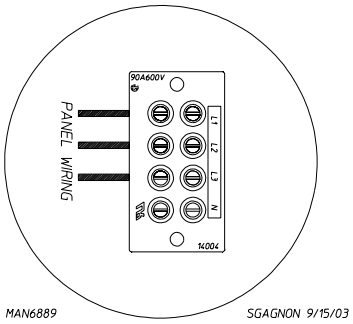


A ground lug is provided in the rear electrical box to connect your service ground.

2) 3-Phase (3ø) Wiring Connections/Hookup

The electrical connections on **ALL** 3-phase (3ø) gas and steam dryers are made into the rear service box located at the upper left area of the dryer. The electrical connections are made at the power distribution block located in the service box. The ground connection is made to the copper lug, also provided in this box. To gain access, the service box cover ***must be*** removed.





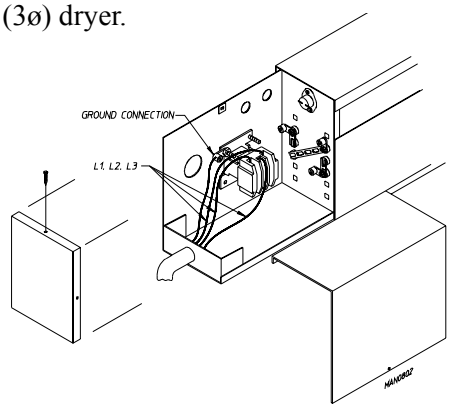
The neutral will only be used on 4-wire service. This is typical for 380-416V, 50 Hz.

b. Electrically Heated Models Only

The electrical input connections are made at the electric oven contactor located inside the assembly at the rear center upper section of the dryer. The ground connection is made to a copper lug also provided in this area. To gain access, remove oven rear service cover.

The only electrical input connections to the dryer are the 3-phase (3ø) power leads (L1, L2, L3, and sometimes neutral) and ground. Single-phase (1ø) power for the control circuit and for any single-phase (1ø) motors (if present) is done internally to the dryer by the factory at the oven contactor. No single-phase (1ø) input connection is required on a 3-phase (3ø) dryer.

CAUTION: The dryer ***must be*** grounded. A ground lug has been provided for this purpose.



Input connection wiring **must be** sized properly to handle the dryer's current draw. This information is printed on the dryer's data label.

IMPORTANT: A strain relief ***must be*** used where the input wiring enters the oven assembly.

G. GAS INFORMATION

It is your responsibility to have **ALL** plumbing connections made by a qualified professional to ensure that the gas plumbing installation is adequate and conforms to local and state regulations or codes. In the absence of such codes, **ALL** plumbing connections, materials, and workmanship **must conform** to the applicable requirements of the National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Installation Codes CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (Liquid Propane [L.P.] Gas) or LATEST EDITION.

IMPORTANT: Failure to comply with these codes or ordinances, and/or the requirements stipulated in this manual, can result in personal injury and improper operation of the dryer.

The dryer and its individual shutoff valves **must be** disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa). The dryer **must be** isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure test of the gas supply system at test pressures equal to or less than 1/2 psig (3.5 kPa).

IMPORTANT: Failure to isolate or disconnect dryer from supply as noted can cause irreparable damage to the gas valve, which will VOID THE WARRANTY.

WARNING: FIRE OR EXPLOSION COULD RESULT DUE TO FAILURE OF ISOLATING OR DISCONNECTING THE GAS SUPPLY AS NOTED.

1. Gas Supply

   The gas dryer installation **must meet** the American National Standard...National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Installation Codes CAN/CGA-B149.1 M91 (Natural Gas) or CAN/CGA-B149.2-M91 (L.P. Gas) or LATEST EDITION, as well as local codes and ordinances and **must be** done by a qualified professional.

NOTE: Undersized gas piping will result in ignition problems, slow drying, increased use of energy, and can create a safety hazard.

The dryer **must be** connected to the type of heat/gas indicated on the dryer data label. If this information does not agree with the type of gas available, ***DO NOT operate the dryer***. Contact the reseller who sold the dryer or contact the **ADC** factory.

IMPORTANT: Any burner changes or conversions ***must be*** made by a qualified professional.

The input ratings shown on the dryer data label are for elevations up to 2,000 feet (610 meters), unless elevation requirements of over 2,000 feet (610 meters) were specified at the time the dryer order was placed with the factory. The adjustment or conversion of dryers in the field for elevations over 2,000 feet (610 meters) is made by changing each burner orifice. If this conversion is necessary, contact the reseller who sold the dryer or contact the **ADC** factory.

IMPORTANT: THIS GAS DRYER **IS NOT** PROVIDED WITH AN INTERNAL GAS SUPPLY SHUT OFF AND AN EXTERNAL GAS SUPPLY SHUT OFF ***MUST BE*** PROVIDED.

2. Technical Gas Data

a. Gas Specifications

	TYPE OF GAS			
	NATURAL		LIQUID PROPANE	
Manifold Pressure*	3.5 inches W.C.	**8.7 mb**	10.5 inches W.C.	**26.1 mb**
In-Line Pressure	6.0 - 12.0 inches W.C.	**14.92 - 29.9 mb**	11.0 inches W.C.	**27.4 mb**

Shaded areas are stated in metric equivalents

* Measured at gas valve pressure tap when the gas valve is on.

b. Gas Connections

Inlet connection ---------- 3/4" N.P.T.
Inlet supply size ---------- 3/4" Diameter Pipe (minimum)
Btu/hr input (per dryer) ---------- 175,000 (44,100 kcal/hr)

1) Natural Gas

Regulation is controlled by the dryer's gas valve's internal regulator. Incoming supply pressure **must be** consistent between a minimum of 6.0 inches (14.92 mb) and a maximum of 12.0 inches (29.9 mb) water column (W.C.) pressure.

2) Liquid Propane (L.P.) Gas

Dryers made for use with L.P. gas have the gas valve's internal pressure regulator blocked open so that the gas pressure **must be** regulated upstream of the dryer. The pressure measured at each gas valve pressure tap **must be** a consistent 10.5 inches (26.1 mb) water column. There is no regulator or regulation provided in an L.P. dryer. The water column pressure **must be** regulated at the source (L.P. tank) or an external regulator **must be** added to each dryer.

		TYPE OF GAS						Liquid Propane Conversion Kit Part Number
Btu/hr Rating	**kcal/hr Rating**	Natural			Liquid Propane			
		Qty.	D.M.S.*	Part No.	Qty.	D.M.S.*	Part No.	
175,000	**44,100**	4	#30	140819	4	#49	140803	883186

Shaded area is stated in metric equivalent

* Drill Measurement Size (D.M.S.) equivalents are as follows:

Natural Gas ..... #30 = 0.1285" (3.2639 mm).
Liquid Propane Gas ..... #49 = 0.0730" (1.8542 mm).

3. Piping Connections

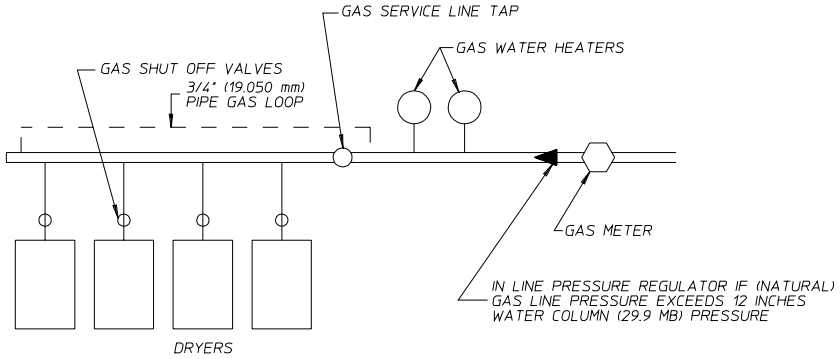
ALL components/materials **must conform** to National Fuel Gas Code Specifications ANSI Z223.1-LATEST EDITION, or in Canada, CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (Liquid Propane [L.P.] Gas) or LATEST EDITION (for General Installation and Gas Plumbing), as well as local codes and ordinances and **must be** done by a qualified professional. It is important that gas pressure regulators meet applicable pressure requirements, and that gas meters be rated for the total amount of **ALL** the appliance Btu being supplied.

The dryer is provided with a 3/4" N.P.T. inlet pipe connection located at the upper left rear of the dryer. The minimum pipe size (supply line) to the dryer is 3/4" diameter. For ease in servicing, the gas supply line of each dryer must have its own shutoff valve.

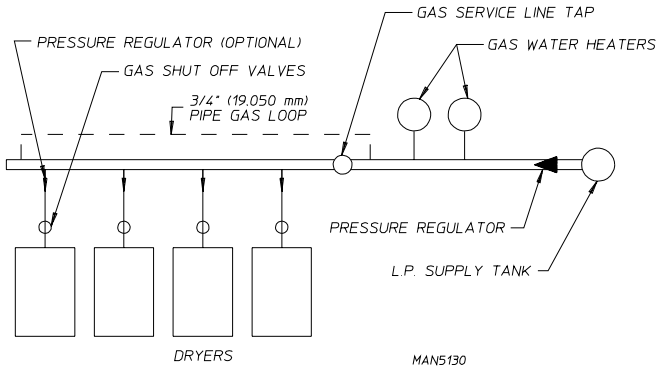
The size of the main gas supply line (header) will vary depending on the distance this line travels from the gas meter or, in the case of liquid propane (L.P.) gas, the supply tank, other gas-operated appliances on the same line, etc. Specific information regarding supply line size **should be** determined by the gas supplier.

NOTE: Undersized gas supply piping can create a low or inconsistent pressure, which will result in erratic operation of the burner ignition system.

TYPICAL NATURAL GAS INSTALLATION


GAS SERVICE LINE TAP
GAS WATER HEATERS
GAS SHUT OFF VALVES
3/4" (19.050 mm) PIPE GAS LOOP
GAS METER
IN LINE PRESSURE REGULATOR IF (NATURAL) GAS LINE PRESSURE EXCEEDS 12 INCHES WATER COLUMN (29.9 MB) PRESSURE
DRYERS

TYPICAL L.P. GAS INSTALLATION



Consistent gas pressure is essential at **ALL** gas connections. It is recommended that a 3/4-inch (19.05 mm) pipe gas loop be installed in the supply line servicing a bank of dryers. An in-line pressure regulator **must be** installed in the gas supply line (header) if the (natural) gas pressure exceeds 12.0 inches (29.9 mb) of water column (W.C.) pressure.

NOTE: A water column test pressure of 3.5 inches (8.7 mb) for natural gas and 10.5 inches (26.1 mb) for L.P. dryers is required at the gas valve pressure tap of each dryer for proper and safe operation.

A 1/8" N.P.T. plugged tap, accessible for a test gauge connection, **must be** installed in the main gas supply line immediately upstream of each dryer.

IMPORTANT: Pipe joint compounds that resist the action of natural gas and liquid propane (L.P.) gas ***must be*** used.

IMPORTANT: Test **ALL** connections for leaks by brushing on a soapy water solution (liquid detergent works well).

WARNING: NEVER TEST FOR LEAKS WITH A FLAME!!!

IMPORTANT: The dryer and its individual shutoff valve ***must be*** disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa).

NOTE: The dryer ***must be*** isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure test of the gas supply system at test pressures equal to or less than 1/2 psig (3.5 kPa).

H. STEAM INFORMATION

It is your responsibility to have **ALL** plumbing connections made by a qualified professional to ensure that the steam plumbing installation is adequate and conforms with local and state regulations or codes.

Care **must be** exercised when leveling steam dryers into final position. After leveling the dryer, check the downward pitch of the heat exchanger from front to rear with a level. Likewise, check the downward pitch of the return condensate manifold toward its outlet part. Absence of these downward pitches will result in probable water hammer and premature heat exchanger fracture and leakage.

The presence of condensate in the steam will cause water hammer and subsequent heat exchanger failure. The steam supply connection **must be** taken from the top of a well-dripped steam main. If the supply run-out to the dryer exceeds 20 feet (6 meters), it **should be** dripped just before the control valve with a proper trap and dirt pocket.

IMPORTANT: Failure to comply with the requirements stipulated in this manual can result in component failure, which will VOID THE WARRANTY.

NOTE: The dryer is manufactured with a pneumatic (piston) damper system, which requires an external supply of air (80 psi +/- 10 psi [5.51 bar +/- 0.68 bar]).

1. Steam Coil pH Level

   The normal pH level for copper type steam coils **must be** maintained between a value of 8.5 to 9.5. For steel type steam coils the pH level **must be** maintained between a value of 9.5 to 10.5. These limits are set to limit the acid attack of the steam coils.

IMPORTANT: Coil failure due to improper pH level will VOID THE WARRANTY.

2. Steam Requirements

Operating Steam Pressure		
Maximum	125 psig*	**861.84 kPa**
Heat Input (Normal Load)	7 Bhp	
Consumption (Approximate)	239 lb/hr	**108.41 kg/hr**

Shaded areas are stated in metric equivalents

* The minimum operating pressure for optimum results is 100 psig (689.47 kPa).

3. Installation Instructions

To ensure an adequate supply of steam is provided, be sure that the steam supply lines and steam return lines are sized and laid out as stipulated in this manual. Inadequate steam supply lines and steam return lines or improper steam plumbing will result in poor performance and can cause component failure. Clean, dry steam **must be** provided to the dryer.

IMPORTANT: Steam coil failure due to water hammer by wet steam will VOID THE WARRANTY.

a. The pressure of the condensate in the steam supply line will cause water hammer and subsequent heat exchanger (steam coil) failure. The steam supply connection into the main supply line **must be** made with a minimum 10-inch (25.4 cm) riser. This will prevent any condensate from draining towards the dryer.

b. The steam supply line to the dryer must include a 12-inch (30.48 cm) riser along with a drip trap and check valve. This will prevent any condensate from entering the steam coil.

c. Flexible hoses or couplings **must be** used. The dryer vibrates slightly when it runs and this will cause the steam coil connections to crack if they are hard piped to the supply and return mains.

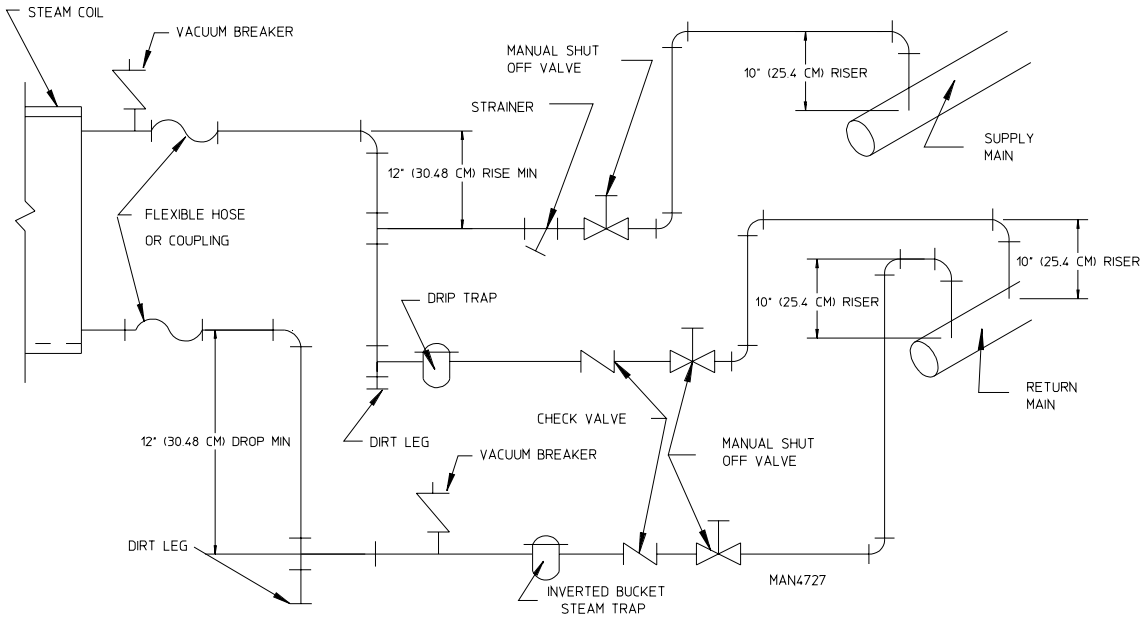
d. Shutoff valves for each dryer **should be** installed in the supply line, return line, and drip trap return line. This will allow the dryer to be isolated from the supply main and the return main if the dryer needs maintenance work.

e. Install an inverted bucket steam trap and check valve at least 12-inches (30.48 cm) below the steam coil as close to the coil as possible: a trap with a capacity of 600 lb (273 kg) of condensate per hour at 125 psi (8.62 bar) is needed for each unit.

f. The supply line and the return line **should be** insulated. This will save energy and provide for the safety of the operator and maintenance personnel.

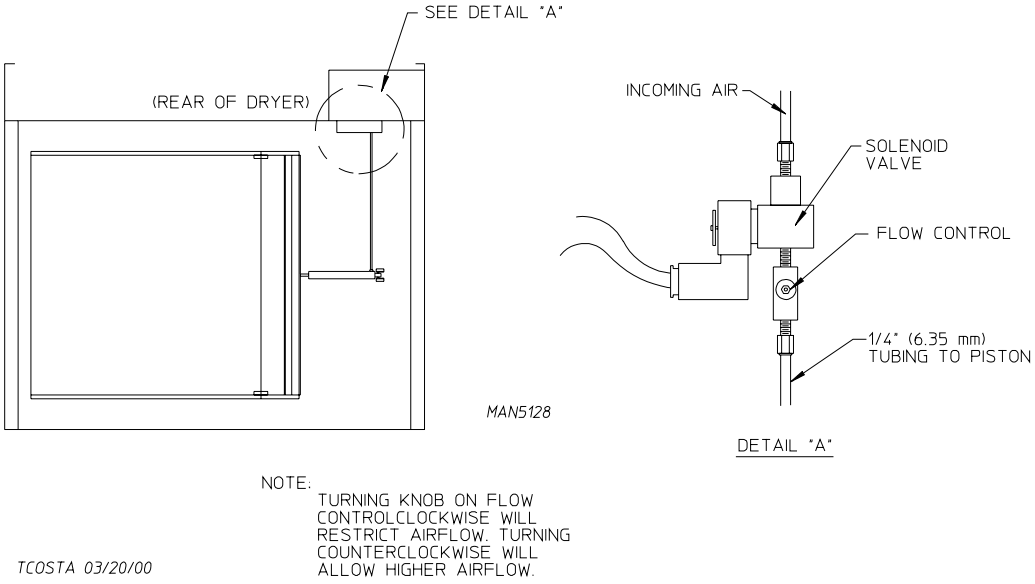
g. Water pockets in the supply line, caused by low points, will provide wet steam to the coil possibly causing steam coil damage. **ALL** horizontal runs of steam supply piping **should be** pitched 1/4-inch (6.35 mm) for every 1 foot (0.30 meters) back towards the steam supply header causing the condensate in the line to drain to the header. Install a bypass trap in any low point to eliminate wet steam.

IMPORTANT: Flexible hose/coupling ***must be*** used. Coil failure due to hard plumbing connections will VOID THE WARRANTY.



4. Steam Damper Air System Connections

The dryer is manufactured with a pneumatic (piston) damper system, which requires an external supply at 0.75 cfh (0.02 cmh) of compressed air. The air connection is made to the steam damper solenoid valve, which is located at the rear inner top area of the dryer just in front of the electric service relay box.



a. Air Requirements

There is no air requirement for dryers with the Electromechanical Steam Damper Option.

COMPRESSED AIR SUPPLY	AIR PRESSURE	
Normal	80 psi	**5.51 bar**
Minimum Supply	70 psi	**4.82 bar**
Maximum Supply	90 psi	**6.20 bar**

Shaded areas are stated in metric equivalents

b. Air Connection

Air connection to system – 1/8" N.P.T.

c. Air Regulation

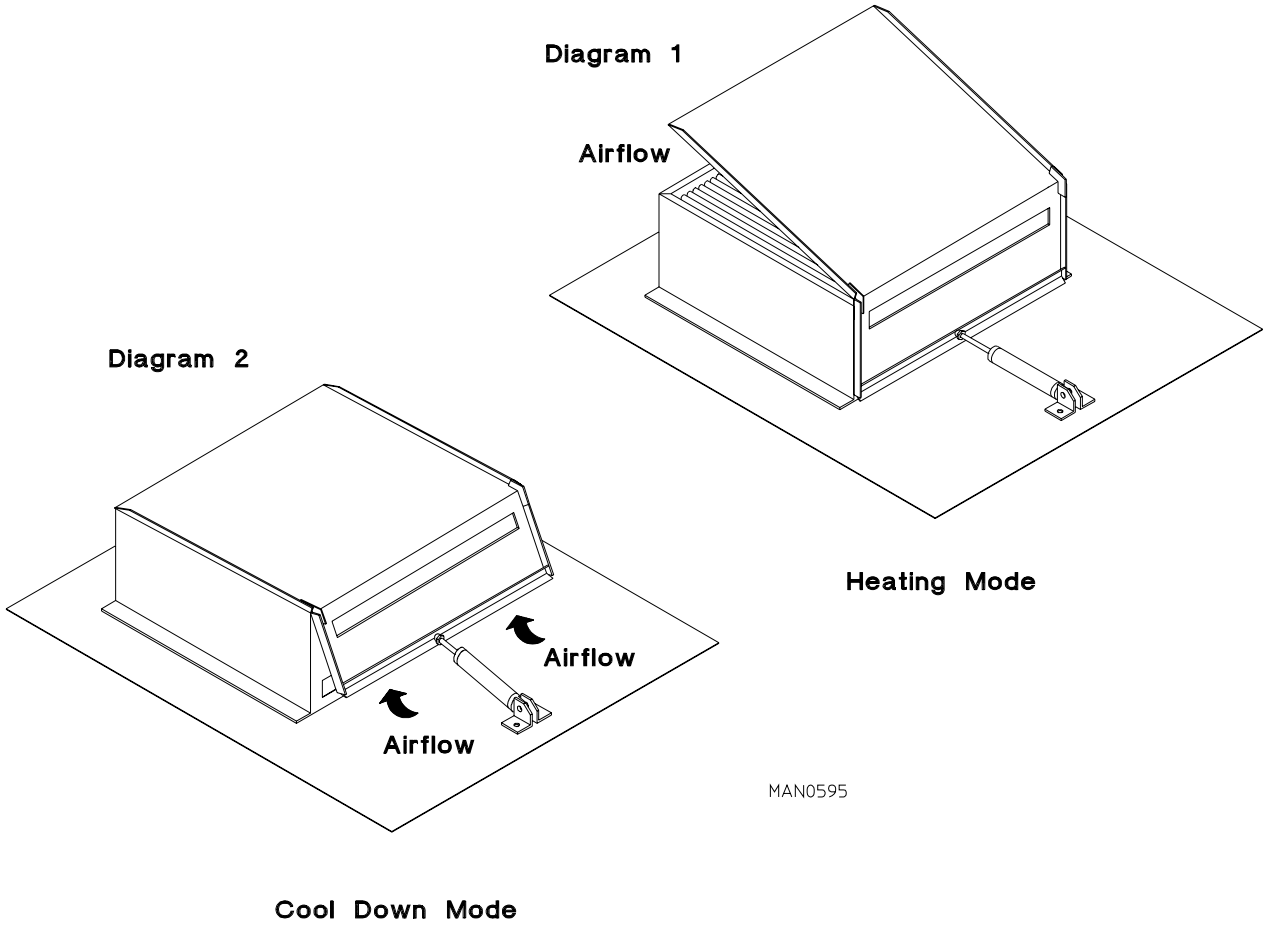
No air regulator or filtration is provided with the dryer. External regulation/filtration of 80 psi (5.51 bar) **must be** provided. It is suggested that a regulator/filter gauge arrangement be added to the compressed air line just before the dryer connection. This is necessary to ensure that correct and clean air pressure is achieved.

5. Steam Damper System Operation

The steam damper, as shown in the **illustration below**, allows the coil to stay constantly charged eliminating repeated expansion and contraction. When the damper is opened, the air immediately passes through the already hot coil, providing instant heat to start the drying process. When the damper is closed, ambient air is drawn directly into the basket (tumbler), allowing a rapid cool down.

Diagram 1 shows the damper in the heating (open) mode, allowing heat into the basket (tumbler).

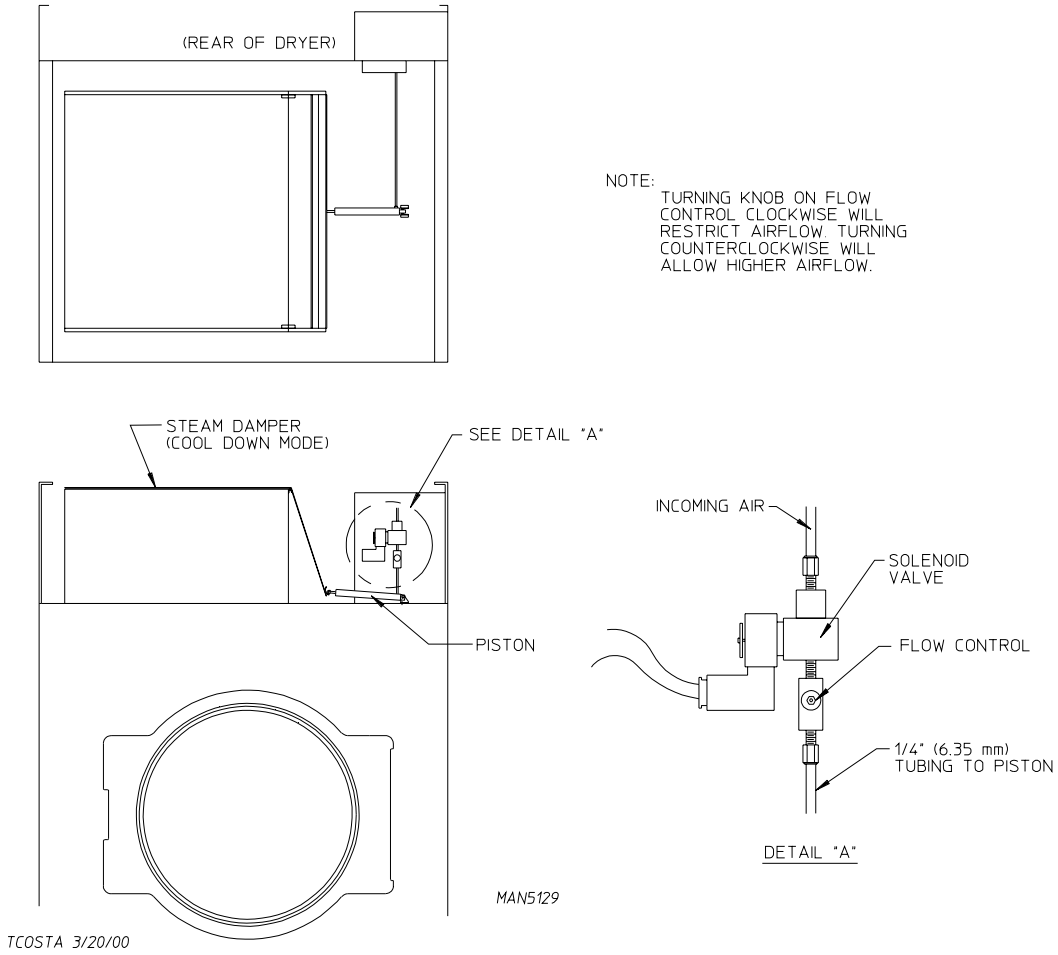
Diagram 2 shows the damper in the cool down (closed) mode, pulling ambient air directly into the basket (tumbler) without passing through the coils.



NOTE: With the dryer off or with no air supply, the steam damper is in cool down mode as shown in **Diagram 2**.

6. Steam Damper Air Piston (Flow Control) Operation Adjustment

   Damper operation was tested and adjusted prior to shipping at 80 psi (5.51 bar). If damper air adjustment is necessary, locate the flow control valve and make the necessary adjustments as noted below.



I. PREPARATION FOR OPERATION/START-UP

The following items **should be** checked before attempting to operate the dryer:

1. Read **ALL** "**CAUTION**," "**WARNING**," and "**DIRECTION**" labels attached to the dryer.

2. Check incoming supply voltage to be sure that it is the same as indicated on the dryer data label. In the case of 208 VAC or 240 VAC, the supply voltage must match the electric service specifications of the data **exactly**.

3. **GAS MODELS** – Check to ensure that the dryer is connected to the type of heat/gas indicated on the dryer data label.

4. **GAS AND ELECTRIC MODELS** – The sail switch damper assembly was installed and adjusted at the factory prior to shipping. However, each sail switch adjustment **must be** checked to ensure that this important safety control is functioning. (Refer to sail switch adjustment on **page 28**.)

5. Check bolts, nuts, screws, terminals, and fittings for tightness and security.

6. **GAS MODELS** – Be sure that **ALL** gas shutoff valves are in the open position.

7. Check that **ALL** back guard panels and service box covers have been replaced.

8. Check the lint drawer to ensure that it is closed and secured in place.

9. Rotate the basket (tumbler/drum) by hand to be sure it moves freely.

10. **STEAM MODELS** – Check to ensure that a clean, dry, and regulated air supply (80 psi [5.51 bar]) is on the dryer (with air operated damper system only).

11. **STEAM MODELS** – Check to ensure **ALL** steam shutoff valves are open.

12. **STEAM MODELS** – Check steam damper operation.

13. Check basket (tumbler) bearing setscrews to ensure that they are **ALL** tight.

14. Check vent is connected to the dryer and is exhausted to the outdoors.

15. There **should be** a source of fresh air entering the room. This source **should not be** near where the dryers exhaust to the outside.

J. PREOPERATIONAL TEST

ALL dryers are thoroughly tested and inspected before leaving the factory. However, a preoperational test **should be** performed before the dryer is publicly used. It is possible that adjustments have changed in transit or due to marginal location (installation) conditions.

1. Turn on electric power to the dryer.

2. Refer to the Operating Instructions for starting your particular model dryer.

3. **GAS MODELS ONLY**

   a. When a gas dryer is first started (during initial start-up), it has a tendency not to ignite on the first ignition attempt. This is because the gas supply piping is filled with air, so it may take a few minutes for the air to be purged from the lines.

NOTE: During the purging period, check to be sure that **ALL** gas shutoff valves are open.

NOTE: Gas dryers are equipped with a Direct Spark Ignition (DSI) system, which has internal diagnostics. If ignition **is not** established within three (3) times, the heat circuit in the DSI module will "LOCK OUT" until it is manually reset. To reset the DSI system, open and close the main door and restart the dryer.

   b. A gas pressure test **should be** taken at the gas valve pressure tap of each dryer to ensure that the water column (W.C.) pressure is correct and consistent.

NOTE: Water column pressure requirements (measured at the pressure tap of the gas valve body):

Natural Gas ---------- 3.5 Inches (8.7 mb) Water Column.
Liquid Propane (L.P.) Gas --- 10.5 Inches (26.1 mb) Water Column.

IMPORTANT: There is no regulator provided in a liquid propane (L.P.) dryer. The water column pressure ***must be*** regulated at the source (L.P. tank), or an external regulator ***must be*** added to each dryer.

4. Make a complete operational check of **ALL** safety related circuits:

   a. Door Switch(es)

   b. Hi-Limit Thermostats

   c. Cycling Thermostat

   d. **GAS AND ELECTRIC MODELS ONLY** – Sail Switch

NOTE: To check for proper sail switch operation (for gas and electric models only), open the main door and while holding main door switch plunger in, start dryer. Dryer should start but heat circuit ***should not be*** activated (on). If the heat system is activated, the sail switch is improperly adjusted and ***must be*** adjusted by bending the actuator arm of the sail switch toward the burner box. If the actuator arm is bent too far toward the burner box of the dryer, the dryer **may not** have heat when needed. After any adjustment to the sail switch, the above procedure ***must be*** repeated to verify proper operation of the sail switch.

5. Make a complete operational check of **ALL** operating controls.

NOTE: If computer program changes are required, refer to the computer programming section of the manual supplied with the dryer.

6. The dryer **should be** operated through one (1) complete cycle to ensure that no further adjustments are necessary and that **ALL** components are functioning properly.

BASKET (TUMBLER) COATING

The basket (tumbler) is treated with a protective coating. We suggest dampening old garments or cloth material with a solution of water and nonflammable mild detergent and tumbling them in the basket (tumbler) to remove this coating.

7. Check the electric service phase sequence (3-phase [3ø] models only). While the dryer is operating, check to see if the blower (impellor/fan) wheel is rotating in the proper direction. Looking from the front, the blower (impellor/fan) wheel should spin in the clockwise (CW) direction. If it is, the phasing is correct. If the phasing is incorrect, reverse two (2) of the three (3) leads at connections L1, L2, and L3 of the power supply to the dryer.

IMPORTANT: If the blower (impellor/fan) wheel is rotating in the wrong direction, this **will not** only drastically reduce drying efficiency, but it can also cause premature component failure.

K. PREOPERATIONAL INSTRUCTIONS

COIN MODELS

1. Microprocessor Controller (Computer)

   a. When the microprocessor controller (computer) is in the ready state, the liquid crystal display (L.C.D.) screen will display "Ready, Insert $XX.XX (amount) to Start".

   b. Insert coin(s). Once the correct "Amount to Start" has been inserted, the L.C.D. will display "Select Temperature".

   c. Select temperature by pressing "HI," "MED," or "LO." The cycle will start and the L.C.D. will display the Dry Cycle selected and the remaining time.

   d. The dryer will continue through the drying and cooling cycles, until the vended time has expired.

NOTE: To stop dryer, open main door or pressing the pause key. Continuation of the cycle will resume only after the door has been closed and any of the three (3) temperature selection is pressed.

IMPORTANT: For more detailed information regarding the microprocessor controller (computer) on your dryer, refer to the microprocessor user's manual included with the dryer.

2. Mechanical Drop/Rotary Coin Meter or Slide Coin Meter

   a. Insert coin and turn knob (rotary type meter), or for slide meter unit, push in coin chute.

   b. Select Temperature.

   c. Push the "Start" button.

   d. To stop dryer, open the main door.

NON-COIN MODELS

1. The light emitting diode (L.E.D.) display reads "READY" (no cycle in progress).

2. Press the letter on the keyboard (touch pad) corresponding to the cycle desired (i.e., key "D").

3. The dryer will then start. (I.E., blower, basket [tumbler], and heat.)

4. The L.E.D. display will read MANUAL DRYING CYCLE D, 00:00 MIN REMAIN.

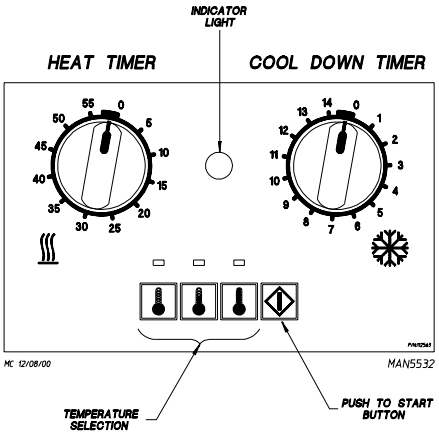
NOTE: The dryer can be stopped at any time by pressing the "STOP/CLEAR" ⊡ key, at this time the dryer will go into a cycle pause. If the "STOP/CLEAR" ⊡ key is pressed again at this point, the cycle that was in progress **will be** cancelled and returned to the "READY" state.

5. When the programmed drying time has expired, the Phase 7 non-coin microprocessor controller (computer) will proceed into the Cool Down Cycle.

6. Once the Cool Down Cycle begins at the end of the heat cycle, the light emitting diode (L.E.D.) display will read COOL DOWN TEMP ___/___ MINUTES REMAINING. At the end of the heat cycle, the dryer will shut off the heat and continue the fan and basket (tumbler) until the Cool Down Time or temperature is reached.

IMPORTANT: For more detailed information regarding the microprocessor controller (computer) on the dryer, refer to the microprocessor user's manual included with the dryer.

DUAL TIMER DRYERS



1. Turn drying timer knob for a time of 20 minutes.

2. Select "High Temp."

3. Push "Push to Start" button.

4. To stop dryer, open the main door.

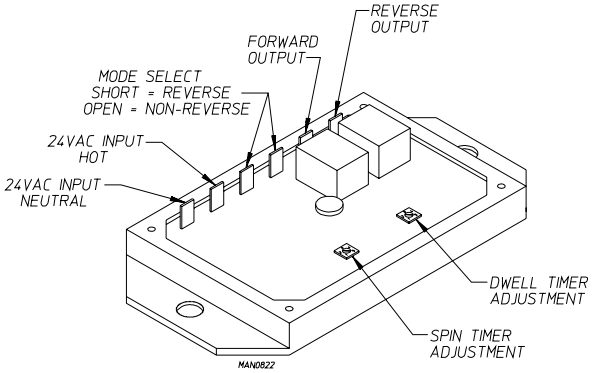
   Spin and dwell (stop) times are adjustable at the reversing timer.

REVERSING TIMER SPIN/DWELL ADJUSTMENTS

Reversing timer models have an electronic reversing timer in the electrical service box, which is located in the front electrical box.

Both the Dwell (stop) Time and the basket (tumbler) Spin Time are adjustable by mode selection switches located on the electronic timer (as noted in the **illustration below**).

TIMING LEGEND					
SPIN TIME					
Adjustment Position Number	1	2	3	4	5
Time in Seconds*	30	60	90	120	150
DWELL (STOP) TIME					
Adjustment Position Number	1	2	3	4	5
Time in Seconds*	5	6.3	7.6	8.9	10.2
* Values shown are +/- 1-second.					



L. SHUTDOWN INSTRUCTIONS

If the dryer is to be shutdown (taken out of service) for a period of time, the following **must be** performed:

1. Discontinue power to the dryer either at the external disconnect switch or the circuit breaker.
2. Discontinue the heat supply:
   a. ***GAS MODELS* – discontinue the gas supply**.

      SHUT OFF external gas supply shutoff valve.

   b. ***STEAM MODELS* – discontinue the steam supply**.

      SHUT OFF external (location furnished) shutoff valve.

SECTION IV

SERVICE/PARTS INFORMATION

A. SERVICE

Service **must be** performed by a qualified trained technician, service agency, or gas supplier. If service is required, contact the reseller from whom the **ADC** equipment was purchased. If the reseller **cannot** be contacted or is unknown, contact the **ADC** Service Department for a reseller in your area.

NOTE: When contacting the **ADC** Service Department, be sure to give them the correct **model number** and **serial number** so that your inquiry is handled in an expeditious manner.

B. PARTS

Replacement parts **should be** purchased from the reseller from whom the **ADC** equipment was purchased. If the reseller **cannot** be contacted or is unknown, contact the **ADC** Parts Department for a reseller in your area. Parts may also be purchased directly from the factory by calling the **ADC** Parts Department at (508) 678-9000 or you may FAX in your order at (508) 678-9447.

NOTE: When ordering replacement parts from the **ADC** reseller or the **ADC** factory be sure to give them the correct **model number** and **serial number** so that your parts order can be processed in an expeditious manner.

SECTION V
WARRANTY INFORMATION

A. RETURNING WARRANTY CARDS

Before any dryer leaves the **ADC** factory test area, a warranty card is placed on the back side of the main door glass. These warranty cards are intended to serve the customer where we record the individual installation date and warranty information to better serve you should you file a warranty claim.

If a warranty card did not come with your dryer, contact the **ADC** Warranty Department or the **ADC** Service Department at (508) 678-9000.

IMPORTANT: A separate warranty card ***must be*** completed and returned for each individual dryer.

NOTE: Be sure to include the installation date when returning the warranty card(s).

B. WARRANTY

For a copy of the **ADC** commercial warranty covering your particular dryer(s), contact the **ADC** reseller from whom you purchased the equipment and request a dryer warranty form. If the reseller **cannot** be contacted or is unknown, warranty information can be obtained from the factory by contacting the **ADC** Warranty Department at (508) 678-9000.

NOTE: Whenever contacting the **ADC** factory for warranty information, be sure to have the dryer's **model number** and **serial number** available so that your inquiry can be handled in an expeditious manner.

C. RETURNING WARRANTY PARTS

ALL dryer or parts warranty claims or inquiries **should be** addressed to the **ADC** Warranty Parts Department. To expedite processing, the following procedures **must be** followed:

1. No parts are to be returned to **ADC** without prior written authorization ("Return Material Authorization" [R.M.A.]) from the factory.

NOTE: An R.M.A. is valid for only thirty (30) days from date of issue.

The R.M.A. issued by the factory, as well as any other correspondence pertaining to the returned part(s), **must be** included inside the package with the failed merchandise.

2. Each part **must be** tagged with the following information:

   a. **Model number** and **serial number** of the dryer from which part was removed.

   b. Nature of failure (be specific).

   c. Date of dryer installation.

   d. Date of part failure.

   e. Specify whether the part(s) being returned is for a replacement, a credit, or a refund.

NOTE: If a part is marked for a credit or a refund, the invoice number covering the purchase of the replacement part ***must be*** provided.

NOTE: Warranty tags **(ADC** P/N 450064) are available at "no charge" from **ADC** upon request.

3. The company returning the part(s) must clearly note the complete company name and address on the outside of the package.

4. **ALL** returns **must be** properly packaged to ensure that they are not damaged in transit. *Damage claims are the responsibility of the shipper.*

IMPORTANT: No replacements, credits, or refunds **will be** issued for merchandise damaged in transit.

5. **ALL** returns **should be** shipped to the **ADC** factory in such a manner that they are insured and a proof of delivery can be obtained by the sender.

6. **Shipping charges are not the responsibility of ADC. ALL returns should be "prepaid" to the factory. Any "C.O.D." or "COLLECT" returns will not be accepted**.

IMPORTANT: No replacements, credits, or refunds **will be** issued if the claim **cannot** be processed due to insufficient information. The party filing the claim **will be** notified in writing, either by "FAX" or "CERTIFIED MAIL – Return Receipt Requested," as to the information necessary to process claim. If reply **is not** received by the **ADC** Warranty Department within thirty (30) days from the FAX/letter date, then no replacements, credits, or refunds **will be** issued, and the merchandise **will be** discarded.

SECTION VI
ROUTINE MAINTENANCE

A. CLEANING

A program and/or schedule **should be** established for periodic inspection, cleaning, and removal of lint from various areas of the dryer, as well as throughout the ductwork system. The frequency of cleaning can best be determined from experience at each location. Maximum operating efficiency is dependent upon proper air circulation. The accumulation of lint can restrict this airflow. If the guidelines in this section are met, an **ADC** dryer will provide many years of efficient, trouble free, and most importantly safe operation.

WARNING: LINT FROM MOST FABRICS IS HIGHLY COMBUSTIBLE. THE ACCUMULATION OF LINT CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: KEEP DRYER AREA CLEAR AND FREE FROM COMBUSTIBLE MATERIALS, GASOLINE, AND OTHER FLAMMABLE VAPORS AND LIQUIDS.

NOTE: Suggested time intervals shown are for average usage, which is considered six (6) to eight (8) operational (running) hours per day.

IMPORTANT: Dryer produces combustible lint and ***must be*** exhausted to the outdoors. Every 6 months, inspect the exhaust ducting and remove any lint buildup.

SUGGESTED CLEANING SCHEDULE

EVERY THIRD OR FOURTH LOAD

Clean the lint screen every third or fourth load. A clogged lint screen will cause poor dryer performance. The lint screen is located in a drawer below the main door. Open the lint drawer, brush or vacuum the lint off the lint screen, and remove the lint. Inspect lint screen and replace if torn.

NOTE: The frequency of cleaning the lint screen can best be determined from experience at each location.

WEEKLY

Clean lint accumulation from lint chamber, thermostat, and microprocessor temperature sensor (sensor bracket) area.

WARNING: TO AVOID THE HAZARD OF ELECTRICAL SHOCK, DISCONTINUE ELECTRICAL SUPPLY TO THE DRYER.

STEAM DRYERS

Clean the steam coil fins. We suggest using compressed air and a vacuum cleaner with brush attachment.

WARNING: When cleaning steam coil fins, be careful not to bend the fins. If fins are bent, straighten by using a fin comb, which is available from local air-conditioning supply houses.

90 DAYS

Inspect and remove lint accumulation in customer furnished exhaust ductwork system and from dryer's internal exhaust ducting.

WARNING: THE ACCUMULATION OF LINT IN THE EXHAUST DUCTWORK CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: ***DO NOT*** OBSTRUCT THE FLOW OF COMBUSTION AND VENTILATION AIR.

WARNING: INSPECT AND REMOVE ANY LINT ACCUMULATION, WHICH CAN CAUSE THE BACK DRAFT DAMPER TO BIND OR STICK.

NOTE: A back draft damper that is sticking partially closed can result in slow drying and shutdown of heat circuit safety switches or thermostats.

NOTE: When cleaning the dryer cabinet(s), avoid using harsh abrasives. A product intended for the cleaning of appliances is recommended.

B. ADJUSTMENTS

7 DAYS AFTER INSTALLATION AND EVERY 6 MONTHS THEREAFTER

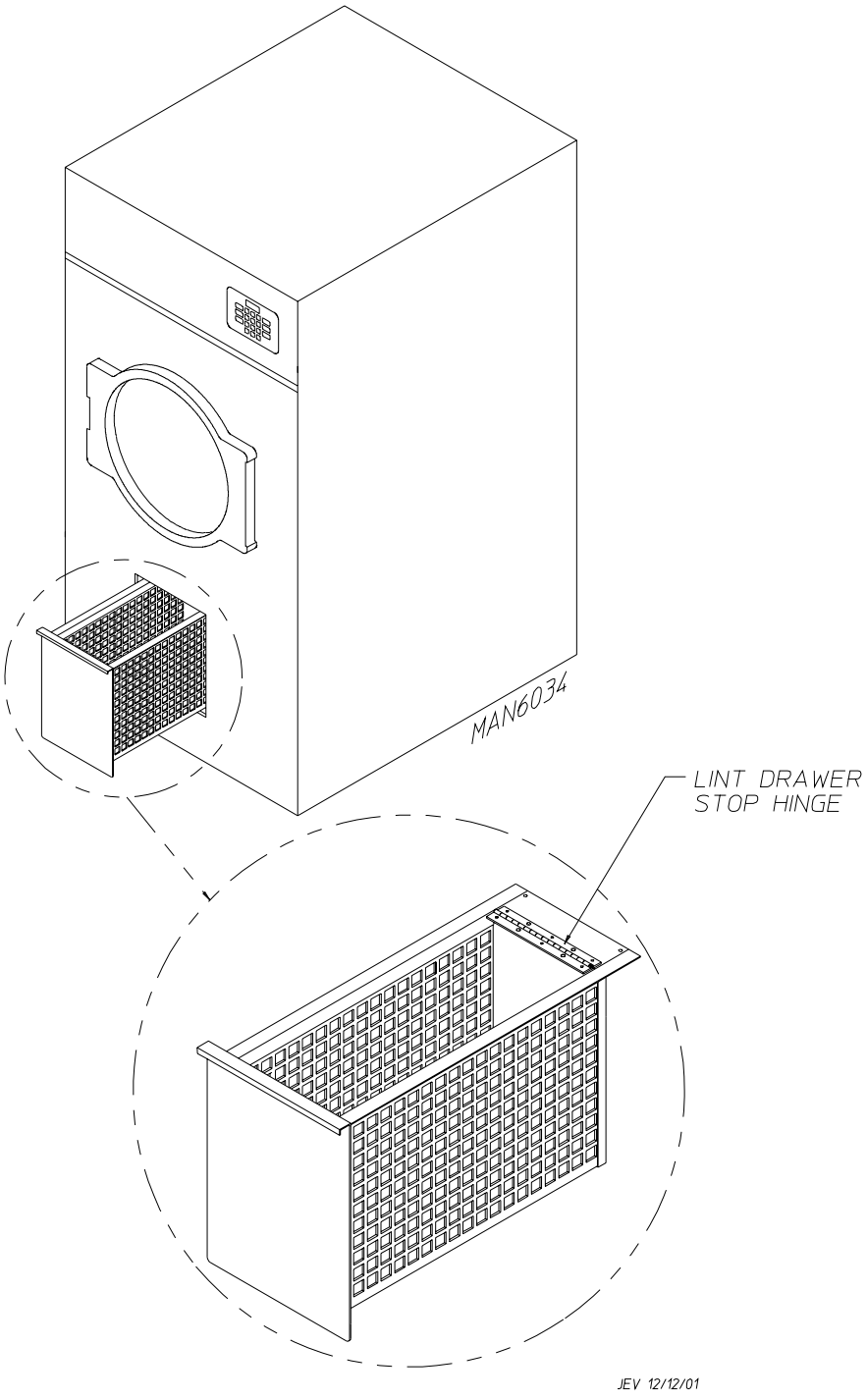
Inspect bolts, nuts, screws, setscrews, grounding connections, and nonpermanent gas connections (unions, shutoff valves, and orifices). Drive belts **should be** examined. Cracked or seriously frayed belts **should be** replaced. Tighten loose V-belts when necessary. Complete operational check of controls and valves. Complete operational check of **ALL** safety devices (door switches, lint drawer switch, sail switch, and hi-limit thermostats).

C. LUBRICATION

The motor bearings, idler bearings, and under normal/most conditions the basket (tumbler) bearings are permanently lubricated. It is physically possible to relubricate the basket (tumbler) bearings if you choose to do so even though this practice is not necessary. Use Shell Alvania #2 grease or its equivalent. The basket (tumbler) bearings used in the dryer **DO NOT** have a grease fitting. Provisions are made in the bearing housing for the addition of a grease fitting, which can be obtained elsewhere, or from **ADC** by ordering kit P/N 882159 (includes two [2] fittings).

D. LINT DRAWER REMOVAL

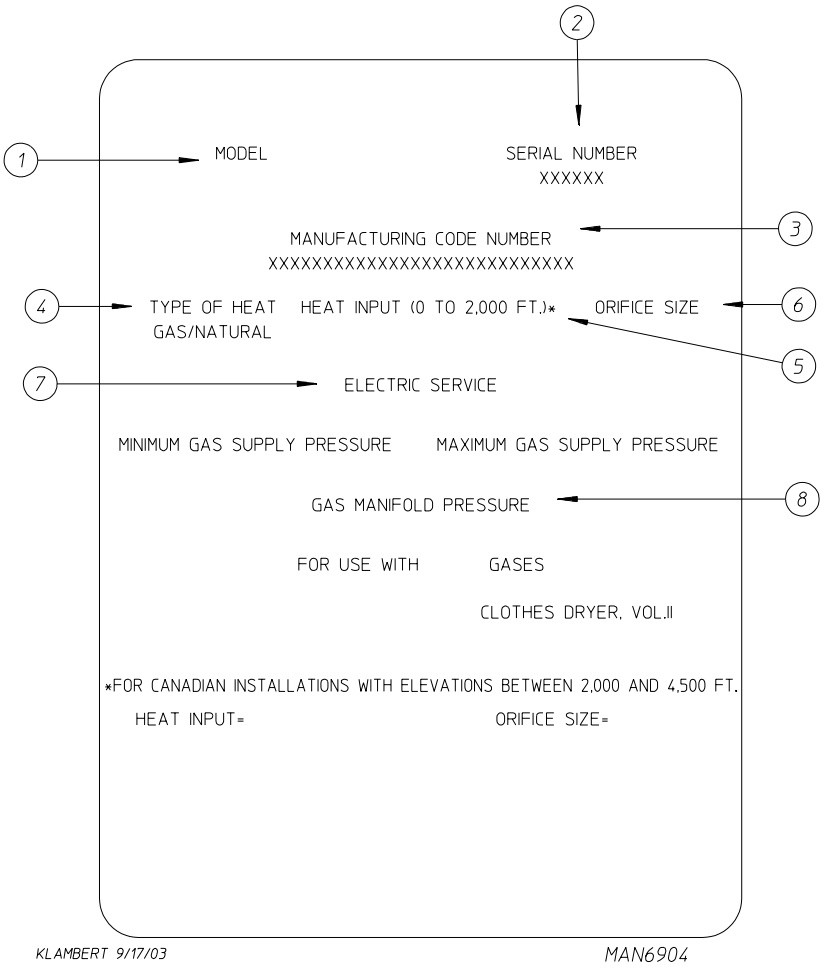
To remove the lint drawer from the dryer pull drawer out approximately halfway. Rotate/move lint drawer stop hinge (refer to the **illustration below**) downward and pull drawer out.



IMPORTANT: After replacing the lint drawer back into the dryer, be sure to rotate/move hinge back to the upward stop position.

SECTION VII

DATA LABEL INFORMATION



When contacting **American Dryer Corporation**, certain information is required to ensure proper service/parts information from **ADC**. This information is on the data label located on the upper left side panel behind control (service) door. When contacting **ADC**, please have the **model number** and **serial number** available.

1. **MODEL NUMBER** – Describes the size of the dryer and the type of heat (gas, electric, or steam).

2. **SERIAL NUMBER** – Allows the manufacturer to gather information on your particular dryer.

3. **MANUFACTURING CODE NUMBER** – The number issued by the manufacturer, which describes **ALL** possible options on your particular model.

4. **TYPE OF HEAT** – This describes the type of heat for your particular dryer, gas (either natural gas or liquid propane [L.P.] gas), electric, or steam.

5. **HEAT INPUT** (for GAS DRYERS) – This describes the heat input in British thermal units per hour (Btu/hr).

6. **ORIFICE SIZE** (for GAS DRYERS) – Gives the number drill size used.

7. **ELECTRIC SERVICE** – This describes the electric service for your particular model.

8. **GAS MANIFOLD PRESSURE** (for GAS DRYERS) – This describes the manifold pressure taken at the gas valve tap.

SECTION VIII

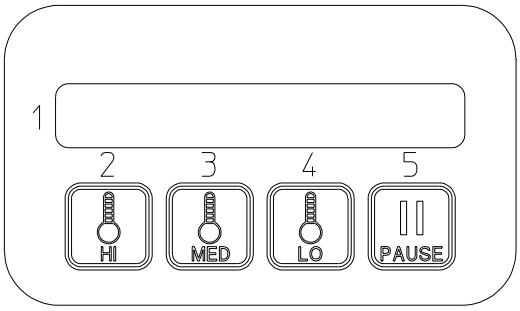
PROCEDURE FOR FUNCTIONAL CHECK OF REPLACEMENT COMPONENTS

1. Microprocessor Controller (Computer) Board

   a. Phase 7 Coin Models

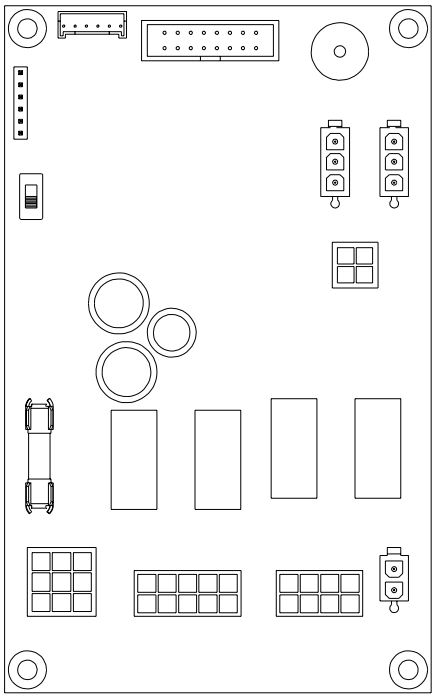
      1) Upon completing installation of the replacement microprocessor controller (computer) board, reestablish power to the dryer.

      2) Start the drying cycle by pressing any temperature selection keys (HI, MED, or LO).



JM 9/17/03 MAN6873

      3) Verify that the applicable indicator lights on the microprocessor controller (computer) board are lit. (Refer to the **illustration below**.)

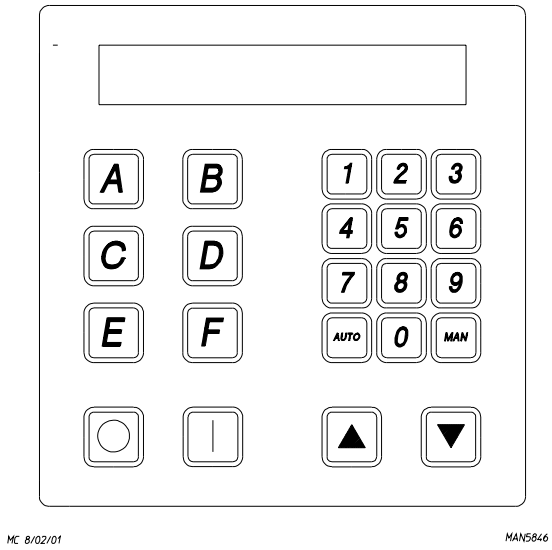


MAN6875 JM 9/11/03

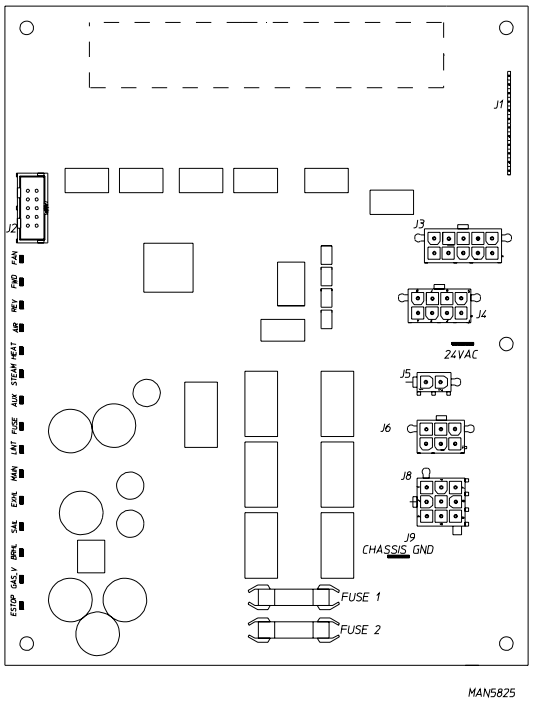
b. Phase 7 Non-Coin Models

1) Upon completing installation of the replacement microprocessor controller (computer) board, reestablish power to the dryer.

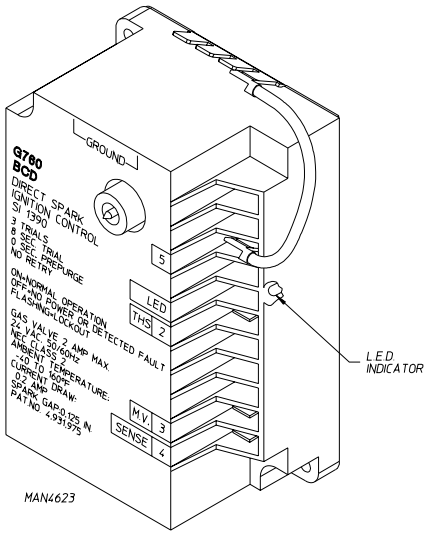
2) Start the drying cycle by pressing any of the preset cycles in letters A-F.



3) Verify that the applicable indicator lights on the microprocessor controller (computer) board are lit. (Refer to the **illustration below**.)



2. <u>For Models with Direct Spark Ignition (DSI) Module (Type I)</u>



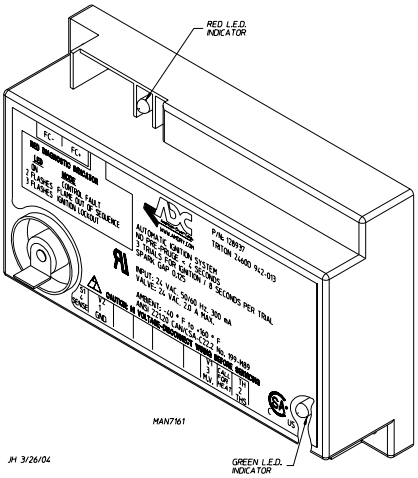
Theory of Operation:

Start the drying cycle. When the gas burner ignites within the chosen trial for ignition time (6-seconds), the flame sensor detects gas burner flame and signals the DSI module to keep the gas valve open as long as there is a call for heat. The DSI module will "LOCKOUT" if the gas burner flame <u>is</u> <u>not</u> sensed at the end of the trial for ignition period. The trial for ignition period <u>will be</u> repeated for a total of three (3) retries/trials (the initial try and two [2] more retries/trials). If the flame <u>is</u> <u>not</u> sensed at the end of the third retry/trial (inter-purge period of 30-seconds), the DSI module will "LOCKOUT" (light emitting diode [L.E.D.] diagnostic indicator flashes).

A steady L.E.D. indicator indicates normal operation.

No L.E.D. indicator indicates a power or an internal failure has occurred.

3. <u>For Models with DSI Module (Type II)</u>



Theory of Operation:

Start the drying cycle. When the gas burner ignites within the chosen trial for ignition time (8-seconds), the flame sensor detects gas burner flame and signals the DSI module to keep the gas valve open as long as there is a call for heat. The DSI module will "LOCKOUT" if the gas burner flame <u>is</u> <u>not</u> sensed at the end of the trial for ignition period. The trial for ignition period <u>will be</u> repeated for a total of three (3) retries/trials (the initial try and two [2] more retries/trials). If the flame <u>is</u> <u>not</u> sensed at the end of the third retry/trial (inter-purge period of 30-seconds), the DSI module will "LOCKOUT" (a red L.E.D. diagnostic indicator will flash).

An unlit red L.E.D. diagnostic indicator indicates normal operation.

A lit green L.E.D. diagnostic indicator indicates dryer controller is calling for heat and that **<u>ALL</u>** interlocks have been satisfied.

SECTION IX

MANUAL RESET BURNER HI-LIMIT INSTRUCTIONS

A. PHASE 7

This dryer was manufactured with a manual reset burner hi-limit thermostat, which is monitored by the Phase 7 computer. If the burner hi-limit is open prior to the start of the drying cycle, the dryer will start momentarily and then shut down, the Phase 7 computer will display "BURNER HIGH LIMIT FAULT" with an audio indication.

If the burner hi-limit opens during a drying cycle, the Phase 7 computer will also display the same error code described above, along with an audio indication. If the drum temperature is above 100° F (38° C), the dryer will continue to run with no heat for 3 minutes or until the drum temperature has dropped below 100° F (38° C). For non-coin models, the clear/stop button on the Phase 7 keyboard (touch pad) **must be** pressed to clear the error condition. For coin models, the pause key **must be** held down for 3-seconds to clear the fault. The open burner hi-limit **must be** reset "manually" prior to the start of the next cycle.

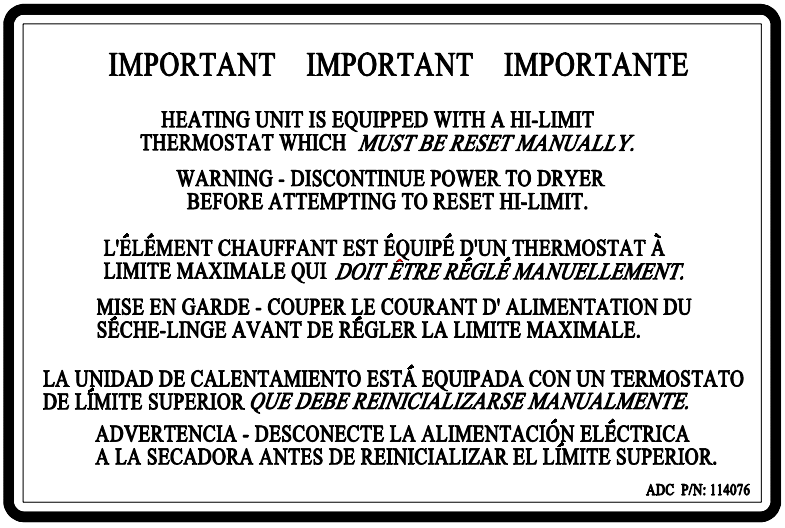
B. DUAL TIMER

This dryer was manufactured with a manual reset burner hi-limit thermostat. If the burner hi-limit is open prior to the start of the drying cycle, or during the cycle, the dryer will not recognize the open state of the burner hi-limit and will start or continue through the drying cycle with no heat. Manual reset hi-limit **must be** reset manually.

This hi-temperature condition may be caused due to a restricted exhaust, poor airflow, or improper burner operation.

The location of the burner hi-limit is on the right side of the burner box, looking at the burner from the back of the dryer.

WARNING: Discontinue power to dryer before attempting to reset hi-limit.


IMPORTANT IMPORTANT IMPORTANTE
HEATING UNIT IS EQUIPPED WITH A HI-LIMIT THERMOSTAT WHICH MUST BE RESET MANUALLY.
WARNING - DISCONTINUE POWER TO DRYER BEFORE ATTEMPTING TO RESET HI-LIMIT.
L'ÉLÉMENT CHAUFFANT EST ÉQUIPÉ D'UN THERMOSTAT À LIMITE MAXIMALE QUI DOIT ÊTRE RÉGLÉ MANUELLEMENT.
MISE EN GARDE - COUPER LE COURANT D' ALIMENTATION DU SÊCHE-LINGE AVANT DE RÉGLER LA LIMITE MAXIMALE.
LA UNIDAD DE CALENTAMIENTO ESTÁ EQUIPADA CON UN TERMOSTATO DE LÍMITE SUPERIOR QUE DEBE REINICIALIZARSE MANUALMENTE.
ADVERTENCIA - DESCONECTE LA ALIMENTACIÓN ELÉCTRICA A LA SECADORA ANTES DE REINICIALIZAR EL LÍMITE SUPERIOR.
ADC P/N: 114076

SECTION X

FIRE SUPPRESSION SYSTEM (F.S.S.)

F.S.S. In Action

The exclusive Fire Suppression System (F.S.S.) will extinguish fires that may start in the drying basket (tumbler). A series of sensors positioned throughout the basket (tumbler) and interfaced with the microprocessor controller (computer) will trigger the F.S.S. water jet(s) to quickly extinguish the flames. The water jet(s) remain on for 2 minutes and will automatically activate again if a fire condition remains or reignites. While the water jet(s) are activated, the basket (tumbler) will jog to move the water throughout the load. The microprocessor controller (computer) will display until the dryer is attended to, that the system was activated.

BEFORE YOU START!

CHECK LOCAL CODES AND PERMITS

Call your local water company or the proper municipal authority for information regarding local codes.

IMPORTANT:	It is your responsibility to have **ALL** plumbing connections made by a qualified professional to assure that the plumbing installation is adequate and conforms to local, state, and federal regulations or codes.

IMPORTANT:	It is the installation or owners responsibility to see that the necessary or required water, water pressure, pipe size, or connections are provided. Manufacturer assumes no responsibility if the F.S.S. **is not** connected, installed, or maintained properly.

INSTALLATION

1. Requirements

The F.S.S. **must be** supplied with a minimum water pipe size of 1/2" and be provided with 40 psi +/- 20 psi (2.75 bar +/- 1.37 bar) of pressure. For use of optional manual bypass, a second source with the same piping and pressure requirements is required.

Flexible 1/2 feeds **must be** provided to avoid damage to electric water solenoid valve by vibration.

IMPORTANT: Flexible supply line/coupling ***must be*** used. Solenoid valve failure due to hard plumbing connections WILL VOID WARRANTY.

If the rear area of the dryer, or the water supply is located in an area where it will be exposed to cold/ freezing temperatures, provisions **must be** made to protect these water lines from freezing.

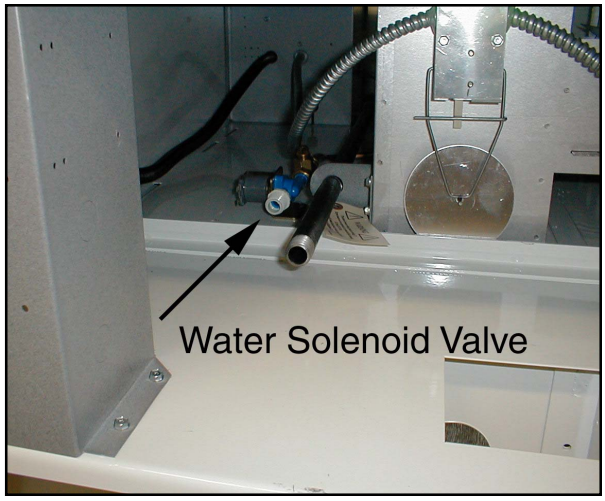
WARNING: If the water in the supply line or water solenoid valve freezes, the F.S.S. **will be** INOPERATIVE!!

IMPORTANT: Appliance is to be connected to the water mains using a new hose set and the old hose set ***should not be*** reused.

2. Water Connections:

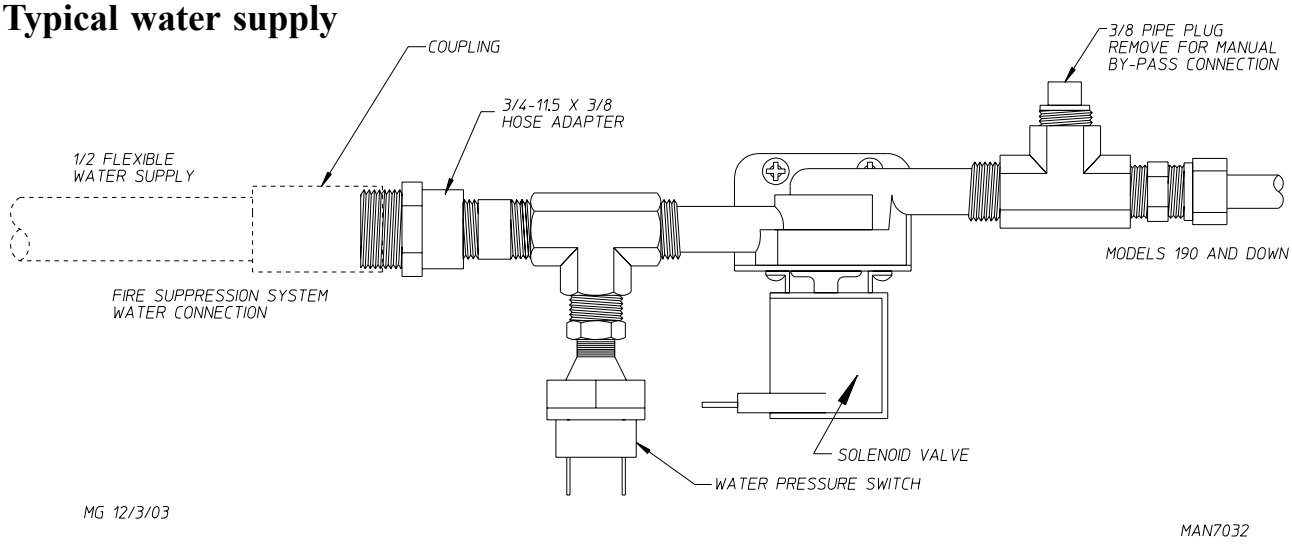
The water connection is made to the 3/4"-11.5 NH hose adaptor, located at the rear upper midsection of the dryer (refer to the photo).

NOTE: The 3/4"-11.5 NH is a standard hose coupling screw thread. It **is not** to be confused with 3/4" N.P.T. The sealing of an NH connection is made with a washer opposed to the mating threads of an N.P.T. assembly. The two (2) thread designs **are not** compatible.



IMPORTANT: Flexible supply line/coupling ***must be*** used. Solenoid valve failure due to hard plumbing connections WILL VOID WARRANTY. **It is recommended** that a filter or strainer be installed in the water supply line.

Typical water supply

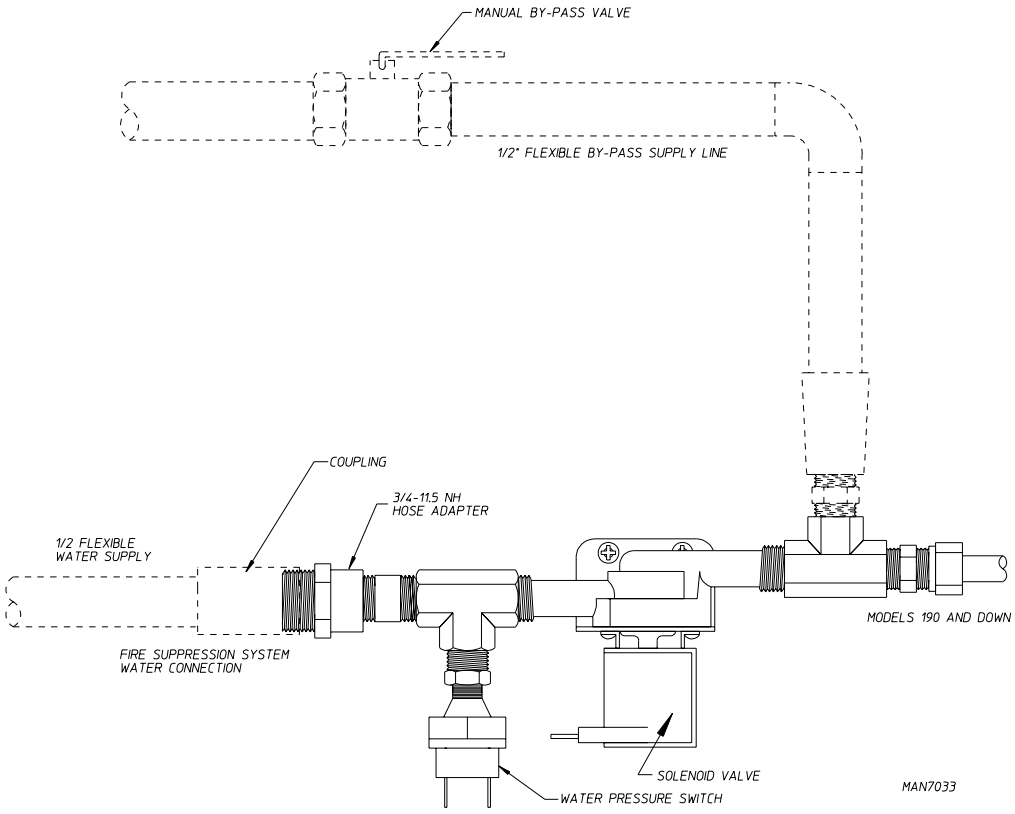


OPTIONAL MANUAL BYPASS

Provisions are made in the dryer's F.S.S. for the installation of an optional manual bypass. Depending on the model dryer, the connections for the manual bypass are made at the "T" or "three way" fitting located in the outlet supply side of the water solenoid valve. The use and connections of this manual bypass are at the option or discretion of the owner.

The water connection for the manual bypass is made to the "T" or "three way" fitting, which has a 3/8" F.P.T. and a coupling **must be** used to provide the minimum 1/2" supply (feed) line.

If the rear area of the dryer, or the water supply is located in an area where it <u>will</u> <u>be</u> exposed to cold/freezing temperatures, provisions **must be** made to protect these water lines from freezing.



TYPICAL INSTALLATION
1/2" WATER LINE

WARNING: If the water in the supply line or water solenoid valve freezes, the F.S.S. **will be** INOPERATIVE!!

The manual ball cock shutoff valve **must be** located outside of the dryer at a distance from the dryer where it is easily accessible.

3. Electrical Requirements

   No independent external power source or supply connection is necessary. The 24 volt power to operate the F.S.S. is accomplished internally in the dryer (from the dryer controls).

WARNING: Electrical power ***must be*** provided to the dryer at **ALL** times. If the main electrical power supply to the dryer is disconnected, the F.S.S. is INOPERATIVE!!

F.S.S. Theory of Operation

While the dryer is in an idle state, or 20-seconds after the heat turns off, the Phase 7 microprocessor controller (computer) monitors the thermistor probe, located in the top of the basket (tumbler) chamber, and records the minimum temperature. If the minimum recorded thermistor probe temperature is greater than 120° F (48° C) and the microprocessor controller (computer) detects a 50° rise in temperature, this will be the trip point and the F.S.S. routine will activate.

While a drying cycle is in process and the heat has turned on at least once, the Phase 7 microprocessor controller (computer) monitors the exhaust temperature transducer. If the drying cycle temperature set point is set greater than 160° F (71° C) and the microprocessor controller (computer) detects an exhaust temperature rise 25° F greater than set point, this will be the trip point and the F.S.S. routine will activate. If set point is below 160° F (71° C), the trip point will be 185° F (85° C).

Once the F.S.S. routine is activated, the microprocessor controller (computer) will display "F.S.S. ACTIVATED" and water will be injected into the basket (tumbler) chamber. Any time water is being injected into the basket (tumbler), the basket (tumbler) drive will turn the load for 1-second every 15-seconds. This process will continue for a minimum of 2 minutes. After the 2 minutes have elapsed, the microprocessor controller (computer) will check if the temperature remained above trip point; if so, the water will remain on. The microprocessor controller (computer) will continue to check if the temperature is above trip point every 30-seconds. If the water has been on for a constant 10 minutes, the water will be turned off, regardless of the temperature, and the microprocessor controller (computer) will display "F.S.S. WAS ACTIVATED." If the temperature has dropped below trip point, the microprocessor controller (computer) will turn off the water prior to 10 minutes.

SYSTEM RESET

After the microprocessor controller (computer) determines that the situation is under control and shuts the water being injected into the basket (tumbler) off, the microprocessor controller (computer) display will read "F.S.S. WAS ACTIVATED," and the horn/tone will sound until reset manually.

NON-COIN – To reset the microprocessor controller (computer) once the microprocessor controller (computer) displays "F.S.S. WAS ACTIVATED," press the red "STOP/CLEAR" key on the keyboard (touch pad).

COIN – To reset the microprocessor controller (computer) once the microprocessor controller (computer) displays "F.S.S. WAS ACTIVATED," press and hold the red "PAUSE" key for 3-seconds on the keyboard (touch pad).

F.S.S. WATER VALVE CHECK

The operation of the water solenoid valve can be tested to ensure that the water supply system and valve are functional. Before attempting a system check, be sure that **ALL** water supply shutoff valves to the dryer are in the OPEN position; the dryer **must be** in the "READY" mode with no cycle loaded or in progress.

NON-COIN

1. Press and hold the red "STOP/CLEAR" key (while in "READY" mode and no cycle is in progress).
2. Press and hold the "A" key.
3. Water valve will open and water will be dispensed into basket (tumbler) area as long as both keys are held.

The Phase 7 non-coin microprocessor controller (computer) will prompt the user to perform a F.S.S. valve check at every 4000 hours to ensure proper functionality. At the 4000 hour mark, the microprocessor controller (computer) will wait for end of the cycle and then will prompt the user to "PLEASE EMPTY TUMBLER, THEN PRESS THE 'STOP/CLEAR' AND 'A' KEYS TO TEST THE WATER VALVE." When the 'STOP/CLEAR' and 'A' keys are pressed, the microprocessor controller (computer) will activate the F.S.S. water valve for 2-seconds, at which point the microprocessor controller (computer) will prompt the user with the following message, "IF WATER DID NOT TURN ON, CALL FOR SERVICE. THANK YOU."

NOTE: The microprocessor controller (computer) **will not** let the user continue until the valve test has been completed.

COIN

While the microprocessor controller (computer) is in the program mode, Press and hold the PAUSE key for 3-seconds to get into the valve test mode. Valve test mode: The microprocessor controller (computer) will display "PRESS AND HOLD MEDIUM TO OPEN WATER VALVE". When the medium key is pressed, the microprocessor controller (computer) will activate the water output.

F.S.S. Diagnostics

NON-COIN – In the event that the Phase 7 non-coin microprocessor controller (computer) detects a fault in the F.S.S. system, the microprocessor controller (computer) will display the message "F.S.S. DISABLED… READY." To find out why the F.S.S. is disabling, press and hold the red "STOP/CLEAR" and green "START" keys. This will cause the microprocessor controller (computer) to display a diagnostic message, as detailed in the "F.S.S. Diagnostics Messages" section.

COIN – In the event that the Phase 7 coin microprocessor controller (computer) detects a fault in the F.S.S. system, the microprocessor controller (computer) will display the message "F.S.S. DISABLED…READY, INSERT XX TO START." To find out the reason for the F.S.S. disabling, press and hold the red "PAUSE" and "LOW" keys. This will cause the microprocessor controller (computer) to display a diagnostic message, as detailed in the following section.

F.S.S. DIAGNOSTICS MESSAGES

OPEN THERMISTOR PROBE – This message indicates that the F.S.S. thermistor probe either is not connected or is damaged. If this condition is detected, the Phase 7 non-coin microprocessor controller (computer) will immediately enter F.S.S. DISABLED mode.

SHORTED THERMISTOR PROBE – This message indicates that the F.S.S. thermistor probe is damaged or the wiring is shorted. If this condition is detected, the Phase 7 non-coin microprocessor controller (computer) will immediately enter F.S.S. DISABLED mode.

DISCONNECTED WATER VALVE – This message indicates that the water valve is open or that it is not connected to the microprocessor controller (computer). If this condition is detected, the Phase 7 non-coin microprocessor controller (computer) will continue to monitor the condition for a period of 5 minutes before entering F.S.S. DISABLED mode. Once the condition is corrected, the microprocessor controller (computer) will continue to monitor the condition for 1 minute before exiting F.S.S. DISABLED mode.

SHORTED WATER VALVE – This message indicates that the water valve is shorted or that the wiring to the valve is shorted. If this condition is detected, the Phase 7 non-coin microprocessor controller (computer) will continue to monitor the condition for a period of 5 minutes before entering F.S.S. DISABLED mode. Once the condition is corrected, the microprocessor controller (computer) will continue to monitor the condition for 1 minute before exiting F.S.S. DISABLED mode.

WATER NOT CONNECTED – This indicates that there is no water pressure at the water valve. This will occur if water is not connected to the dryer, or if there is low water pressure in the water line coming to the dryer. This could also signify a defective pressure switch or defective wiring to the pressure switch. If this condition is detected, the Phase 7 non-coin microprocessor controller (computer) will continue to monitor the condition for a period of 5 minutes before entering F.S.S. DISABLED mode. Once the condition is corrected, the microprocessor controller (computer) will continue to monitor the condition for 1 minute before exiting F.S.S. DISABLED mode.

STARTING A CYCLE
WHEN COMPUTER IS IN "F.S.S. IS DISABLED" MODE

NON-COIN – When the F.S.S. is disabled, the user can still start a cycle. However, when a cycle is started, the microprocessor controller (computer) will display the following message: "F.S.S. IS DISABLED. PRESS 'START' TO CONTINUE." This message will be displayed every time a cycle is started, until the disabling condition has been corrected.

COIN – When the F.S.S. is disabled, the user can still start a cycle. Simply insert credit and select a cycle to start.

Notes